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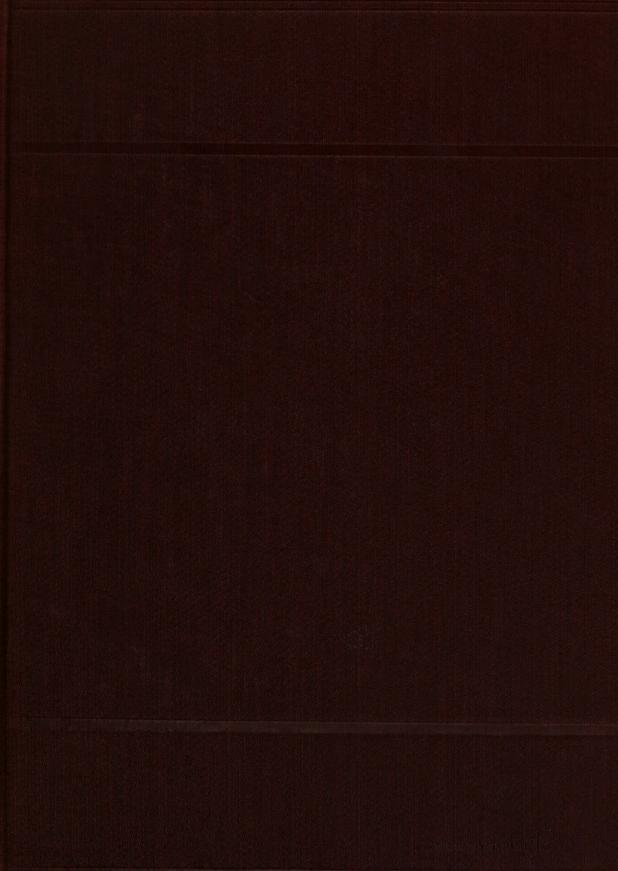
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THIRTIETH YEAR

THE ENGINEERING INDEX ANNUAL

FOR

1913

COMPILED FROM THE ENGINEERING INDEX PUBLISHED MONTHLY
IN THE ENGINEERING MAGAZINE DURING 1918



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TO THE USER

ITH this volume of THE ENGINEERING INDEX—the twelfth since the work was first undertaken and the eighth since it assumed the "Annual" form—a continuous index to the engineering and technical literature of the past thirty years is made available to the reader. And in this book, as in the Annual volumes previously issued, the "classified" system of arranging the items is followed in place of the "strict alphabetic" order of the earlier volumes. In other words, the articles indexed are first grouped under the great divisions of engineering practice to which they belong—Civil, Mechanical, Electrical, Mining, etc.—and under these again they are sub-grouped according to the recognized special divisions of each field. After these two steps have been taken in sorting the miscellaneous literature of the day into closely related sections, the final arrangement under each section becomes strictly alphabetical.

In The Engineering Index Annual for 1913, herewith presented, the Classification of the Index on page 7 not only gives the main and sub-heads of the classified arrangement, but lists in addition every catchword, with its page reference, so that a full outline of the entire contents is given in a highly condensed form, and by running his eyes over this topical list the reader may save much of the time that might be spent searching the pages of the book itself.

Serial articles are indexed upon the appearance of the first installment only, thus giving the searcher the clue by which the succeeding articles can be found. This rule has been waived in some instances of articles in two or three installments, which are indexed entire.

The INDEX comprises about two hundred and fifty publications, representing seventeen nations and colonies and six languages. About three-fourths of these journals are printed in English, the others being in German, French, Spanish, Italian and Dutch. With every entry a brief descriptive note is given defining the scope and purport of the articles, in many cases sufficient for the purpose of the investigator and saving him the labor of further search. In general, however, the INDEX is used as a guide to the otherwise overwhelming mass of information contained in the huge files of the engineering periodicals stacked on the shelves of reference libraries throughout the world.

The work as a whole represents the continuation of that originally started by the late Professor J. B. Johnson in the journal of the Association of Engineering Societies in 1884, and turned over by that association to The Engineering Magazine at the close of 1895. The previous volumes, published in 1892, 1896, 1901, 1906, 1907, 1908, 1909, 1910, 1911, 1912 and 1913, respectively, covered with increasing fulness and thoroughness the field of periodical literature in engineering and closely related applied sciences. This latest volume brings the investigator down to the December, 1913, monthly part of The Engineering Index, covering the serial literature of engineering up to October, 1913, while the earlier parts enable searches such as occur in patent cases and the like to be prosecuted with a minimum of cost and delay.

REFERENCE LIST OF PERIODICALS

Alphabetical List of Periodicals Indexed in Order of their Abbreviations

*			
		Issues	_ •
ABBREVIATION	TITLE	PER	PLACE OF
		YEAR	PUBLICATION
All Indus	Alliance Industrielle	12	Brussels
Am Arch	American Architect	52	New York
Am Engr	American Engineer	19	New York New York
Am Gas Light Jour	American Gas Light Journal	52	New York New York New York
Am Inst of Archts	American Institute of Architects	Trrec	New York
Am Jour Pub Health		10	Now York
Am Jour Lub Heatch	American Journal of Public Health	12	MEM TOTE
Am Jour Sci		12	New Haven
Am Jour Sci	American Journal of Science		New York
Am Rev of Revs	American Review of Reviews		
Ann d Ponts et Chauss	Annales des Ponts et Chaussées		Paris
	Annali della Società degli Ingeg-	24	Rome
Ital	neri e degli Architetti Italiani		
Ap Sci	Applied Science	12	Toronto
Arch Rec	Architectural Record	12	New York
Arch Rev	:Architectural Review	12	Boston
Arch't	Architect	52	London
Arch't & Build	Architecture and Building	12	New York
Aust in Stand	Australian Mining Standard	52	Melbourne
Autocar	Australian Mining Standard Autocar	52	Coventry, Eng.
Auto Jour	Automotor Journal		London
Automobile	Automobile		New York
	Automobile	52	
	Automobil-Rundschau	24	Berlin
B. C. Min & Engng Rec	British Columbia Mining and En-	10	77
D. 10'	gineering Record	12	Vancouver, B.C.
Beton u Eisen	Beton und Eisen	20	Vienna
Boller Maker	Boiler Maker	12	New York
Brass Wld	Brass World	12	Bridgeport
Br Build	Brick Builder	12	Boston
Br Engrs Club	Brooklyn Engineers Club	1	Boston New York
Builder	Builder	52	London
Bull Am Inst Min Engrs	Bulletin of the American Institute		
J	of Mining Engineers	12	New York
Bull Am Ir & St Assn	Bulletin of the American Iron and	~-	
	Steel Association	12	Philadelphia
Bull Am Ry Engng Assn	Bulletin of the American Railway		
24	Engineering Association	10	Chicago
Bull Bur of Standards	Bulletin of the Bureau of Stand-		1
Dun Dui OI Dunianian	ards	Irreg.	Washington
Bull Can Min Inst	Bulletin of the Canadian Mining		:
Dun Can Min Insc	Institute	4	Montreal
Bull Dept of Labor	Bulletin of the Department of La-	-	;
Bull Dept of Dabor	bor	Irreg.	Washington
Dull Inter Dr. Cong	Bulletin of the International Rail-	LITUS.	, ,, as
Bull Inter Ry Cong		12	Brussels
n u a :	way Congress	12	Liége, Belg.
Bull Sci	Bulletin Scientifique	12	Diege, Deig.
Bull Soc d'Encour	Bulletin de la Société d'Encourage-	12	Domin
D 11 0 F . 1141	ment pour l'Industrial nationale	12	. Paris
Bull Soc Int d'Électriciens	Bulletin de la Société Interna-	10	m :-
	tionale d'Électriciens	12	Paris
Bull Tech d l Suisse Rom	Bulletin Technique de la Suisse		_
	Romande	24	Lausanne
Bull Univ of Illinois	Bulletin of the University of Illi-		
	nois	Irreg.	Urbana, Ill.
Bull Univ of Wisconsin	Bulletin of the University of Wis-		
	consin	Irreg.	Madison, Wis.
Can Dept of Mines	Canadian Department of Mines	Irreg.	'Ottowa
Can Engr	Canadian Engineer	12	Toronto
Can Min Jour	Canadian Mining Journal	24	Toronto

		Issues	,
A PROPERTY A STORY	TITLE	PER	PLACE OF
ABBREVIATION	111111	YEAR	PUBLICATION
_	,	I DAK	
Continue	Castings	12	Cleveland, O.
Castings	Cement	12	New York
Cement Cement Era	Cement Era	12	Chicago
Chem Engs	Chemical Engineer	12	Chicago
Chem Met & Min Soc of S	Chemical, Metallurgical and Min-		
Africa	ing Society of South Africa	12	Johannesburg
Coal Age	Coal Age		New York
Col Guard	Colliery Guardian	52	London
Col Univ Quar	Columbia University Quarterly	4	New York
Compressed Air	Compressed Air	12	New York ·
Conc-Cem-Age	Concrete-Cement-Age	12	New York
Cont Rec	Contract Record		Toronto
Cornell Civ Engr	Cornell Civil Engineer		Ithaca, N. Y.
Economic Geol	Economic Geology	8	So. Bethlehem
Elec Engng	Electrical Engineering		Dalton, Ga.
Elec Jour	Electric Journal	12	Pittsburgh, Pa.
Elect'n Lond	Electrician	52	London
Elec Rev & W Elec	Electrical Review and Western		1
	Electrician	52	Chicago
Elec Rev_Lond	Electrical Review	52	London
Elec Ry Jour	Electric Railway Journal	52	New York
Elec Trac	Electric Traction	12	Chicago
Elec Wld	Electrical World	52	New York
Elek Kraft u Bahnen	Elektrische Kraftgetriebe und		1
731 . 1 . 4 1	Bahnen	36	Munich
Elektrochem Zeit	Elektrochemische Zeitschrift	12	Berlin
Elektrotech Rund	Elektrotechnische und Polytech- nische Rundschau	ro	Datadam
Elek u Masch	Elektrotechnik und Maschinenbau	52	Potsdam
Elek u Masch Eng & Min Jour		52	Vienna New Vent
Eng & Min Jour	Engineering and Mining Journal	52 12	New York New York and
Eng Mag	Engineering Magazine	12	
Eng News	Engineering News	52	London New York
Engng	Engineering News	52 52	London
Engng Contr	Engineering Contractor	12	New York
Engng & Contr	Engineering and Contracting	52	Chicago
Eng Rec	Engineering Record		New York
Engr Lond	Engineer	52	London
Feuerungs	Feuerungstechnik	24	Leipzig
Foundry	Foundry	12	Cleveland
Gag Wid	Cae World	52	London
Gen Elec Rev	General Eleectrical Review	12	Schenectady
Génie Civil	Génie Civil	52	Paris
Giess Zeit	Giesserei Zeitung	24	Berlin
Glasers Ann	Glasers Annalen für Gewerbe und		Berlin
	Bauwesen		•
Glückauf	Glückauf	52	Essen, Germany
Heat & Ven Mag	Heating and Ventilating Magazine		New York
Horseless Age	Horseeless Age		New York
Ice & Refrig	Ice and Refrigeration	12	New York
Il Cemento	Il Cemento	_6	Milan
Ind Wld	Industrial World	52	Pittsburgh
Indus Engng	Industrial Engineering	12	New York
Industria	'Industria	52	Milan
Ingenieur	De Ingenieur	52	Hague
Ing Ferro Ins Engng	L'Ingeegnieria Ferroviaria	24	Rome
Int Marina Frame	Insurance Engineering	12	New York
Int Marine Engng Ir Age	International Marine Engineering	12 59	New York
Ir & Coal Trds Rev	Iron Age	52 50	New York
Ir and Steel Inst	Iron and Coal Trades Review Iron and Steel Institute	52	Lonion
Ir Trd Rev	Iron Trade Review	52	London
Jour of Accountancy	Journal of Accountancy	52 12	Cleveland New York
	of The Control of the	14	TAGM IOLK

	· _	Issues	
ABBREVIATION	TITLE	PER YEAR	PLACE OF PUBLICATION
	!		
Jour Am Brass Found Assn	Founders' Association	Irreg.	Buffalo
	Journal of the American Foundry- men's Association	12	New York
Jour Am Soc Mech Engrs	Journal American Societ of Me- chanical Engineers	irreg.	New York
Jour Am Soc of Nav Engrs	Journal of the American Society of Naval Engineers	4	New York
Jour Assn Eng Socs	Journal of the Association of Engineering Societies	12	Boston
Jour Can Min Inst	Journal of the Canadian Mining Institute	1	, Montreal
Jour Cleveland Engng Soc	Journal of the Cleveland Engineering Society	12	Cleveland
Jour Effic Soc	Journal of the Efficiency Society	12	New York
Jour Fr Inst	Journal Franklin Institute	12	Philadelphia
Jour Ir & St Inst	Journal of the Iron and Steel In-	2	London
Jour N E Water Wks Assn	Journal of the New England Waterworks Association	4	Boston
Jour Roy Inst of Brit Arch	Journal of the Royal Institute of British Architects	24	London
Jour Roy United Service Inst	Journal of the Royal United Service Institute	12	London
Jour Soc Arts	Journal of the Society of Arts		London
Jour Transvaal Inst of Mech	Journal of the Transvaal Institute of Mechanical Engineers		Johannesburg
Engrs Jour U. S. Artillery	Journal of United States Artillery	6	Fort Monroe
Jour W of Scot Ir & St Inst	Journal West of Scotland Iron and Steel Institute	12	Glasgow
Jour Worcester Plyn Inst	Journal of Worcester Polytechnic Institute		Worcester
Jour W Soc Engrs	Journal of the Western Society of Engineers	_	Chicago
Kälte Ind	Die Kälte Industrie	12	Hamburg
Locomotive	Locomotive	12	Hartford
Mach	Machinery	12	New York
Marine Eng & Nav Archt	Marine Engineer and Naval Arch-	10	i .
w : D	! itect ! Marine Review	12 52	London
Marine Rev	Mechanical Engineer	52 52	'Cleveland Manchester
Mech Eng Mech Wld	Mechanical World	52 52	London
Mem Soc Ing Civ de France	Memoires de la Société des In-	02	London
	genieurs Civils de France	12	Paris
Met & Chem Engng	Metallurgical and Chemical En-	12	New York
Mines & Min	gineering Mines and Minerals	12	Scranton
Min Jour	Mining Journal	52	London
Min Mag	Mining Magazine	12	London
Min & Sci Pr	Mining and Scientific Press	52	San Francisco
Min & Engng Wld	Mining and Engineering World	52	Chicago
Mitt d Ver f d Förd d Local	Mittheilungen des Vereines für die		ζ.
u Strassengahnwesens	Förderung des Local und	10	772
	Strassenbahnwesen	12	Vienn s Baltimore
Mnfrs Rec	Manufacturers' Record	52	Milan
Monit Tec	Il Monitore Tecnico Der Motorwagen	36 24	Milan Berlin
Motorwagen	Municipal Engineering		Indianapolis
Munic Engng	Municipal Lingineering Municipal Journal		New York
Munic Jour	National Geographic Magazine	12	Washington
Nat Geog Mag Nature	Nature	52	London
Nature	La Nature		Paris
Nineteenth Cent	Nineteenth Century	12	London
	•		

		ISSUES	· - ·
ABBREVIATION	TITLE	PER	PLACE OF
		YEAR	Publication
N Z Mines Rec	New Zealand Mines Record Oesterreichische Zeitschrift für	12	Wellington
tenwesen	Berg- und Hüttenwesen	52	Vienna
Phil Jour of Sci	Philippine Journal of Science	4	, Manila
Pop Mech	Popular Mechanics	12	Chicago
Pop Sci M	Popular Science Monthly	12	New York
Power	Power	52 52	New York London
	Practical Engineer Practical Engineer	24	Chicago
Prac Engr	Proceedings American Institute of	2-2	Onicago
Pro Am Inst Elec Engs	Electrical Engineers	12	New York
Pro Am Min Cong	Proceedings American Mining Con-		
2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2	gress	Irreg.	Philadelphia
Pro Am Soc Civ Engs	Proceedings of the American So-	10	Man Want
	ciety of Civil Engineers	12	New York
	Proceedings American Society of Heating and Ventilating Engi-		
Engs	neers	Irreg.	New York
Pro Am Water Works Assn	Proceedings of the American		
110 Min Water Works 115511	Water Works Association	1	Charleston
Pro Brooklyn Engrs Club	Proceedings of the Brooklyn En-		37 1.
	gineers' Club	1	New York
Pro Can Soc Civ Engs	Proceedings of the Canadian Society of Civil Engineers	Trreg	Montreal
Due Control Der Club	Proceedings of the Central Rail-	IIIcg.	Montercar
Pro Central Ry Club	way Club	26	Philadelphia
Pro Engrs Club of Phila	Proceedings of the Engineers'		
1	Club of Philadelphia	4	Philadelphia
Pro Engrs Soc of West Penn	Proceedings of the Engineers' So-	10	2014 1I
D 7 1 01 D	ciety of Western Pennsylvania Proceedings of the Institution of	12	Pittsburgh
Pro Inst Civ Engs	Civil Engineers	Irreg.	London
Pro Inst Elec Engs	Proceedings of the Institution of	11108.	London
1 10 that Elec Digs	Electrical Engineers	Irreg.	London
Pro Inst Mech Engs	Proceedings of the Institution of		
i	Mechanical Engineers	Irreg.	London
Pro Inst Min & Met	Proceedings of the Institution of Mining and Metallurgy	10	Tandan
Due M. V. Der Clark	Proceedings of the New York Rail-	12	London
Pro N Y Ry Club	way Club	12	New York
Pro Ry Club of Pittsburgh	Proceedings of the Railway Club		1 - 1 - 1 - 1
1 10 10, 0145 01 - 1045 0151	of Pittsburgh	12	Pittsburgh
Pro Soc Engrs	Proceedings of the Society of En-		
	gineers Proceedings of the Southern and	irreg.	London
Pro S & S-W Ry Club	Proceedings of the Southern and Southwestern Railway Club	1	Atlanta
Pro St Louis Ry Club	Proceedings St. Louis Railway Club	12	St. Louis
Pro U S Naval Inst	Proceedings of the United States		1
	Naval Institute	4	Ann a polis
Pro West Ry Club	Proceedings of the Western Rail-	10	· ! on ·
	way Club Quarterly Review	12	Chicago
Qr Rev	Quarry	4 12	London
Quarry Queensland Gov Min Jour	Queensland Government Mining	14	London
decusion Goa Mill Ton.	Journal	12	Brisbane
Rev de Mécan	Revue de Mécanique	12	Paris
Rev de Métal	Revue de Métallurgie	12	Paris
Rev d'Econ Indus	Revue d'Economie Industrielle	12	Paris
Rev d'Electricite	Revue d'Electricite	12	Brussels
Rev d'Electrochim et d'Elec-			
trométal	trométallurgie	12	Paris
Rev Indus	Revue Industrielle	52	Paris
			i.

- -	· ··	ISSUES	
ABBREVIATION	TITLE	PER	PLACE OF
	 -	YEAR	Publication
Rev Gen des Chemins de Fer	Revue Générale des Chemins de		
	Fer	12	Paris
Rev gen des Sciences	Revue générale des Sciences pures		'
Distanta Manistina	et appliquées	24	Paris Rome
Rivista Marittima	Rivista Marittima	12 52	New York
Ry Age Gaz Rudder	Railway Age Gazette Rudder	12	New York
Ry & Engng Rev	Railway and Engineering Review		Chicago
Ry Gaz	Railway Gazette	52	London
	Railway and Locomotive Engineer-		
	ing	12	New York
Ry Mas Mech	Railway Master Mechanic	12	Chicago
Way	Railway Engineering and Main-	12	Chicago
Way S A E Bull	tenance of Way S. A. E. Bulletin	12	New York
Schiffban	Schiffhau	24	Berlin
Sch Mines Quar	School of Mines Quarterly	4	New York
Schweiz Bau	Schweizerische Bauzeitung	52	Zürich
Sci Am	. Scientific American	52	New York
Sci Am Sup	Scientific American Supplement	52	New York
Shipbldr	Shipbuilder	12	Newcastle-on- Tyne
Sib Jour Engng	Sibley Journal of Engineering	12	Ithaca
Soc Belge d Elec	Société Belges des Électriciens	12	Brussels
Stahl n Eisen	Stahl und Risen	52	Düsseldorf
Stevens Ind	Stevens Institute Indicator	4	Hoboken, N. J.
Surveyor	Surveyor	52	London
Tech Mod	Le Technique Moderne	12	Paris
Tele Engr	Telephone Engineer	12 12	Chicago Chicago
Telephony Tram & Ry Wld	Telephony Tramway ani Railway World	12	Chicago London
Trans Am Soc Nev Arch &	Transactions of the American So-	14	Donaon
Mar Engrs	ciety of Naval Architects and		•
3	Marine Engineers	Irreg.	New York
	Transactions Institute of Civil En-	_	D 111
land	gineers of Ireland	irreg.	Dublin
Scot Strain Strain Scot	Transactions Institute Engineers and Shipbuilders in Scotland	Trroc	Clasmow
Trans N.E. Coast Inst of	Transactions NE. Coast Institute	mieg.	Glasgow
Engrs & Shbldrs	of Engineers and Shipbuilders	12	Newcastle
Turbine	Die Turbine	24	Berlin
U. S. Dept of Agriculture	U. S. Department of Agriculture U. S. Department of Mines	Irreg.	Washington
		Irreg.	Washington
U S Geol Survey	U. S. Geological Survey	irreg.	Washington Washington Berlin
Werkzeug West Engng	Werkzeugmaschine Western Engineering	12	San Francisco
Wisconsin Engr	Wisconsin Engineer	12	Madison, Wis.
Wlds Work	World's Work	12	New York
Wood Craft	Wood Craft	12	Cleveland
	Le Yacht	5 2	Paris
	Yale Scientific Monthly	9	New Haven
Zeit d Oest Ing u Arch Ver	Zeitschrift des Oesterreichischen		
	Ingenieur- und Architekten Vereines	52	Vienna
Zeit d Ver deutscher Ing	Zeitschrift des Vereines deutscher	UL	A ICIIII
Serv a ver dearsemen nik	Ingenieure	52	Berlin
Zeit f d ges Turbinenwesen	Zeitschrift für das gesamte Tur-		
•	binenwesen	36	Munich

CLASSIFICATION OF THE INDEX

TO THE USER: This classification should always be consulted, and the page number of the proper division ascertained, before looking for an item in the body of the book.

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9, 1913. No. 43612. The Design of Concrete Abutments Without Wing Walls for Deck Girders. C. M. Luther. Drawings and discussion of important factors entering into designs. 1200 w. Eng News—Oct. 23,

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See also Concrete, under RAILWAY EN-GINEERING, Permanent Way and Buildings.

Arches

Construction of a Long Concrete Arch Bridge in Spokane, Washington. J. F. Greene. Illustrated description of a 7-span structure 940 feet long between abutments, erected over Latah Creek. 2500 w. Eng Rec—March 22, 1913. No. 40764.

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Morris County Turnpike Arch at Hopatcong, N. J., D. L. & W. R. R. A. M. Wolf. Illustrated description of a circular segmental arch corrying three tracks.

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lar segmental arch carrying three tracks. 1200 w. Ry Engng & Main of Way— Sept., 1913. No. 45174.

The Carondelet Park Bridge, St. Louis, Mo, Charles W. Martin. Illustrated description of the design and construction of a flat circular arch of reinforced concrete. 2000 w. Eng News-Oct. 2, 1913. No. 45649.

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Highway Bridge With 200-Metre Arched Span (Pont-route en arc, de 200 mètres d'ouverture). Ch. Dantin. Detailed description of the new bridge at Le Roche-Bernard, over the Vilaine river. Ills. and plates. 6400 w. Génie Civil — Nov. 16, 1912. No. 38489 D.

The Failure of the Arch Framing of the Val Mela Viaduct on the Bevers-Schuls Branch of the Rhaetian Railway (Zum Gerüsteinsturz des Val Mela-Viadukts auf der Linie Bevers-Schuls der Rhätischen Bahn). Abstracts from the report on the cause of failure by R. Weber and S. Grosjean. Ills. 3000 w. Schweiz Bau—Nov. 23, 1912. No. 38436 D.

Test-Loading Until Breaking Point of a 100-Foot Arch Bridge. V. J. Elmont. Explains circumstances which made it possible to make this test at Düsseldorf. Germany, and gives illustrated report of methods and results. 3000 w. Can Engr.—May 22, 1913. No. 42394.

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Calculations on Continuous Arch
Beams (Beitrag zur Berechnung kontinuierlicher Bogenträger). Karl Federhofer. Graphical and mathematical discussion. Ills. 3300 w. Schweiz Bau—
Nov. 23, 1912. No. 38435 D.

The Design of Arched Slabs (Berechnung gewölbter Platten). Huldreich Keller. Studies on stresses in masonry arches. Diagrams. Serial, 1st part. 2000 w. Schweiz Bau — Mar. 1, 1913. No. 40532 D.

Design of an Arch System by the Method of the Ellipse of Elasticity. A. C. Janni. Presents a graphical method and its application to the design of the Kingshighway viaduct in St. Louis. General discussion. 16000 w. Jour W Soc of Engrs—May, 1913. No. 42923 D.

The Determination of Internal Temperature Range in Concrete Arch Bridges. C. S. Nichols and C. B. McCullough. Report of experimental investigations and results, with conclusions. Ills. 101 pp. Bul No. 30, Iowa State

College of Agri and Mech Arts—Jan., 1913. No. 43758 N.

See Reconstruction, Concrete, Constantine and Viaducts, under Bridges; Stresses, under Measurement; and Reinforced Concrete and Arch Design, under Construction.

Bascule

A Rolling Lift Bridge, 186 Ft. Long. Illustrates and describes details of a bascule type structure with a concrete counterweight, near South Chicago, Ill. 1100 w. Ir Age—Jan. 30, 1913. No. 39586 C.

Lift Bridges Over the Buffalo River. Emile Low. Illustrated description of the construction of three movable bridges replacing fixed spans to allow navigation. 4000 w. Ry Age Gaz—Jan. 31, 1913. No. 39597.

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Lift Bridges of Milwaukee. Henry G. Tyrrell. Illustrates and describes types and gives information. 2500 w. Munic Engrg—July, 1913. No. 44032 C.

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Bascule Bridges. H. G. Tyrrell. Illustrates and describes types. 3500 w. Can
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Traversing Bridges. Henry Grattan Tyrrell. A discussion of a variety of forms. 7500 w. Engng & Con—June 4, 1913. No. 42665.

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A Small Bascule Highway Draw Span. L. E. Moore. Illustrated description of a draw-span costing about \$2000, operated by hand. 2000 w. Jour Assn of Engng Socs—June, 1913. No. 43245 C.

Direct-Lift-Drawbridges without Cables. Two articles illustrating and describing different designs for a new type of drawbridge in which the span is raised

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vertically without cables. 2500 w. Eng News—June 5, 1913. No. 42698.

A Double-Deck Bascule Bridge. Drawings and description of a bridge to be built over the Chicago River at Michigan Ave. 1200 w. Eng News—July 17, 1913. No. 43839.

City Waterway Bridge, Tacoma.

City Waterway Bridge, Tacoma. Brief illustrated description. 1000 w. Engng—July, 1913. No. 44047 C.

The Design of a Small Bascule Highway Draw Span. Illustrated description of a bridge operated by hand. 2000 w. Engng & Con—Aug. 13, 1913. No. 44348.

Double Deck Bascule Bridge. Illustrated description of the design and construction of such a bridge at Fort William, Ont. 1000 w. Ry Age Gaz—Oct. 3, 1913. No. 45660.

Illinois River Bridge, St. L., P. & No. W. Ry. Illustrated description of a recently completed single-track bridge at Pekin, Ill., with vertical lift through truss span. 3000 w. Ry Engng & Main if Way—Oct., 1913. No. 45896.

Boston

Notes on the Construction of the Charles River Bridge; East Cambridge Extension of the Boston Elevated Railway Company. Clarence T. Fernald. Illustrated description, showing the construction methods pursued, some of the difficulties encountered, and the final results obtained in erecting this bridge. 4500 w. Jour Assn of Engng Socs—Nov., 1912. No. 37533 C.

Cairo

New Bulak Bridge at Cairo. Illustrated description of this new bridge over the Nile, with a Scherzer rolling lift opening span. 2500 w. Engr, Lond—Oct. 17, 1913. No. 46249 A.

Canada

Early Canadian Bridge-Building. H. G. Tyrrell. Brief illustrated description of structures of the timber, pontoon, and suspension types. 1500 w. Con Rec—April 30, 1913. No. 42068.

See also Quebec and St. Lawrence, under Bridges.

Cantilevers

The Sewickley Cantilever Bridge. Illustrates and describes interesting features of the design and erection of this bridge over the Ohio River, near Pittsburgh. 3500 w. Eng News—Feb. 27, 1913. No. 40235.

The Sewickley Bridge over the Ohio (Le Pont de Sewickley, sur l'Ohio). Alfred Jacobson. Brief general description of the bridge, and outline of the mode of erection adopted in its construction. Ills. and Plate. 1700 w. Genie Civil—Aug. 2, 1913. No. 45344 D.

Reinforcing an Old Cantilever Bridge, Philadelphia, Penn. Henry H. Quimby. Illustrates and describes an interesting old highway bridge and the scheme of reinforcement. 2000 w. Eng News—Sept. 11, 1913. No. 45068.

See Suspension, under Bridges.

Chain

The Reconstruction of the Old Chain Bridge at Newburyport, Mass. Edward C. Sherman. Gives the history of this old bridge, built in 1810, and describes its reconstruction in 1913 to meet new requirements. Ills. 900 w. Eng. News—Sept. 25, 1913. No. 45486.

China

New Bridge Over the Hwang Ho (Yellow River). Illustrated description of the construction of one of the most important bridges in the Far East, on the line of the Tientsin-Pukow Ry. 2000 w. Ry Gaz, Lond. Feb. 7, 1913, No. 39909 A.

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A Chinese Railway Bridge. F. C. Coleman. Illustrations and brief description of the erection of a bridge across the Hwang Ho River. With the exception of the pier in the middle of the stream, the whole bridge is carried by reinforced concrete piles. 1200 w. Sci Am Sup—March 22, 1913. No. 40749.

Cologne

Close Competition in the Designs for a Highway Bridge over the Rhine at Cologne (Engerer Wettbewerb um den Entwurf einer Strassenbrücke über den Rhein bei Köln). Karl Bernhard. Reviews conditions placed, and presents some of the 30 designs submitted. Ills. Serial, 1st part. 3000 w. Zeit des Ver deutscher Ing—July 12, 1913. No. 44647 D.

Concrete

The Present Status of Bridge Building. Frank P. McKibben. Illustrates and describes types of concrete construction. 2500 w. Concrete-Cement Age—Dec., 1912. No. 38151.

Patented Concrete Bridges. Daniel B. Luten. A lecture on this subject, with illustrations of designs, and general discussion. 7000 w. Jour Am Soc of Engng Con—Oct., 1912. No. 38556 C

Concrete Bridges and Viaducts. A. M.

Concrete Bridges and Viaducts. A. M. Wolf. Illustrates and describes representative American highway and railway bridges and track elevation structures. 10000 w. Ry Engng & Main of Way—Jan., 1913 No. 39278.

New Delaware River Bridge at Yardley, Pa. E. Chamberlain. Illustrated description of a recently completed double track concrete arch bridge on the Philadelphia & Reading Ry. 4000 w. Ry

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The Latah Creek Bridge, Spokane ash. J. F. Greene. Illustrated de scription of a large concrete bridge of pleasing 2000 w. design under construction. Eng News-March 27, 1913. No. 46939.

New Delaware River Bridge of the P. & R. Edwin Chamberlain. Illustrated description of a double-track concrete arch structure nearing completion at Yardley, Pa. 4000 w. Ry Age Gaz—April 25, 1913. No. 41640.

Bush and Gunpowder River Bridges. Illustrates and describes the longest concrete slab bridges in America, on the line between Philadelphia and Washington. 4500 w. Ry Engng & Main of Way—July, 1913. No. 43769.

Concrete Bridges: Some Important Features in Their Design. Walter M. Smith Jr. H.

Smith, Sr. and Walter M. Smith, Jr. Illustrates and describes important features in some concrete bridges recently designed by the writers. 3500 w. Pro Am Soc of Civ Engrs—Aug., 1913. No. 44781 F.

Girder Bridge Encased in Concrete Over Prison Point St., East Cambridge, Mass. Drawings and description of an artistic structure. 600 w. Engng & Con
—Aug. 13, 1913. No. 44347.

Artistic Masks for Ugly Bridges. Illustrated description of unsightly plategirders encased in ornamental concrete. 1000 w. Eng Rec—Oct. 11, 1913. No. 45810.

Concrete Bridge and Roadway Improvement at Mount Airy. J. C. Meems. Illustrates and describes the road and bridge improvements on this Virginia

property. 2000 w. Brooklyn Engrs' Club—1912. No. 46394 N. Concrete Railroad Bridges of Three Different Types. A. M. Wolf. Illustrated description of a plate girder bridge with concrete portal, a solid spandrel arch bridge, and an overhead highway bridge of flat slab construction. 2500 w. Ry Engng & Main of Way-Oct., 1913. No. 45897.

See also Arches and Abutments, Reinforced Concrete and Viaducts, under Bridges.

Constantine

The New Bridges at Constantine, Algeria (Les nouveaux ponts de Constantine, Algérie). The construction of the Sidi Rached arch and approaching viaducts. Ills. 2800 w. Genie Civil—March 1, 1913. No. 40597 D.

Construction

Notes on Bridgework. Continued discussion of paper by S. Vilar Y. Boy. 1500 w. Pro Am Soc of Civ Engrs—Feb, 1913. No. 40171 F.

Curves

Culverts

Methods and Cost of Constructing a Combination Corrugated Pipe and Con-crete Culvert With Some Data on Corrugated Pipe Culverts With Concrete End

walls. John N. Edy. Ills. 1100 w. Engng & Con—Jan. 1, 1913. No. 38768. Data for Use in Designing Culverts and Short-Span Bridges. Charles H. Moorefield. Suggestions and preliminary data for use in designing highway culverts. verts and short-span masonry bridges.

Ills. 8000 w. U S Dept of Agri, Bul
45—Feb. 20, 1913. No. 40427 N.

Cost of Constructing Concrete Culverts Under Canal in Sevier County,

Utah. James Jensan. Gives costs of construction of reinforced concrete culverts to carry flood waters under the canal. 3000 w. Engng & Con—April

23, 1913. No. 41587.

Concrete Culverts for Country Roads. C. R. Thomas and T. F. Hickerson. Extracts from a recent bulletin issued by the N. C. Geol. & Ec. Survey. Gives information pertaining to the design and construction of concrete waterways for country roads. Ills. 2000 w. Can Engr May 22, 1913. No. 42395.

A Rational Culvert Formula. W. W. Horner. Gives formula for culvert size based on data used in sewer design in St. Louis. 800 w. Eng News-May 1,

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Concrete Culverts. F. H. McKechnie. Deals with points to be considered before deciding on size, style or shape of culvert to be used. Ills. 1500 w. Can Engr-June 5, 1913. Serial. 1st part. 42688.

Waterman Avenue Culvert, over River des Pères, St. Louis, Mo. Charles W. Martin. Illustrated description of the design and construction features. 1200 w.

Eng News—June 12, 1913. No. 42812. Bridges and Culverts for Country Roads. A. R. Hirst. Read before the Am. Road Cong. An account of standard practice in the state highway work in Wisconsin. 2200 w. Eng News—Oct. 9, 1913. No. 45801.

Highway Bridges and Culverts. W. A. McLean. Gives the general types used in Ontario; the present use of concrete, the materials, inspection, and matters related. Discussion. 10000 w. Pro Am Road Bldrs Assn-1913. No. 46170 N.

Contributions to the Study of Curved Bridges (Contributo at Calcolo dei Ponti in Curva). Cesare Chiodi. A series of formulæ mathematical for railway bridges around curves. Diagrams. 4000

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Railroad Bridge Designs in Europe and America Compared. Edward Godfrey. Mainly a comparison of specifications. Discussion. 17500 w. Jour W Soc of Engrs — March, 1913. No. 41271 D.

The Stability of Elastic Systems (Surla stabilité des systèmes élastiques). M. S. Timochenko. The application of a new method in the determination of stability in certain bridge members. Diagrams. Serial, 1st part. 28,000 w. Ann d Ponts et Chaussées—May-June, 1913. No. 43562 E. + F.

Drawbridges

Bridges Over Navigable Rivers—Some Practical Considerations. C. E. Smith. Discusses rules and laws affecting the construction and operation of drawbridges and lift bridges. Ills. 264 pp. Bul Am Ry Engng Assn—Oct., 1912. No. 37680 E.

Method of Constructing a Vertical Lift Drawbridge; Economic Comparison of Vertical Lift and Swing Spans. From a paper by C. E. Smith, before the Am. Ry. Engng. Assn. The bridge described crosses the St. Francis River, near Marianna, Ark. Ills. 2200 w. Engng & Con —March 19, 1913. No. 40734.

The Economic Theory of Drawbridge Design. Henry Grattan Tyrrell. Gives principles of design applicable to nearly all forms, and discusses designs and related matters. 4000 w. Engng & Con—April 30, 1913. No. 41822.

See also Highways, under Bridges, and Bumpers, under RAILWAY ENGINEERING,

Permanent Way and Buildings.

Dumbarton

Constructional Problems, Dumbarton Bridge, Central California Railway. E. J. Schneider. Outlines, in a general way. the field methods, and discusses details where exceptional problems were met. Ills. 2000 w. Pro Am Soc of Civ Engrs—Jan., 1913. No. 39389 F.

East Haddam, Conn.

Superstructure of the East Haddam Bridge. Illustrated description of a structure over the Connecticut River, with swing and fixed spans, constant floor and varying truss panels, etc. 2500 w. Eng Rec—Nov. 30, 1912. No. 37968.

Substructures of the East Haddam Bridge. Illustrated description of this bridge across the Connecticut River. Special reinforced concrete girder abutment, and a reinforced concrete pivot pier with three tiers of pockets. 1500 w. Eng Rec—Dec. 7, 1912. No. 38075.

Erection

Erection of Kentucky & Indiana Bridge. Illustrates and describes details of the superstructure of a bridge crossing the Ohio River at Louisville, including two 620-ft. simple cantilever trusses. 2200 w. Ry Age Gaz—Jan. 10, 1913. No. 38975.

Erection of Monongahela River Bridge. Illustrates and describes the erection of the long span on approach, moving into position on barge and trucks. Also editorial. 4000 w. Ry Age Gaz—Jan. 17, 1913. No. 39200.

Erection of Lachine Bridge Across the St. Lawrence River. Illustrated account of replacing medium and long single-track spans by a double track superstructure on the old substructure. 1500 w. Eng Rec.—April 5, 1913. No. 41119.

Erecting the New Geneva Bridge. Illustrated description of methods used for a double-track skew span, 475 feet long, erected on shore and rolled, floated and lowered to place. 5500 w. Eng Rec—April 26, 1913. No. 41538.

Erection Costs

Erection Costs for a Double-Track Railway Bridge. M. A. O. Stilson. Describes the structure and gives itemized costs. Ills. 1600 w. Eng News—Feb. 20, 1913. No. 39976.

English Channel

Notable Engineering Plans for Crossing the English Channel by Bridge or Tunnel. H. G. Tyrrell. Reviews the bridge projects and estimates proposed at various times; and the tunnel projects and estimates. 3000 w. Engng & Con—March 19, 1913. No. 40735.

Failure

The Glen Loch Bridge Wreck. Report of a bridge failure that wrecked a train on the Penn. R. R., Nov. 27. Ills. 3500 w. Eng News—Dec. 19, 1912. No. 38337.

The Glen Loch Wreck—More Facts. Charles A. Wentworth. Illustrated article giving a description of the bridge, the damage, and the cause of the failure. 5000 w. Eng News—Dec. 26, 1912. No. 38595.

The Cause of Failure in a Bridge (La causa della caduta di un ponte). C. Fossa Mancini. Study of pier failure in an arch bridge in Italy. Plate. 2200 w. Ann d Soc d Ing e d Arch Ital—April 1, 1913. No. 41531 E.

Floors

Floors for Movable Bridges: A Summary of Practice and Experience. H. G. Tyrrell. 4000 w. Engng & Con—Feb. 19, 1913. No. 39935.

Floors

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Maintenance

Placing a Metallic Flooring Over a Wide Span on a Navigable Stream (Remplacement du tablier métallique à un ouvrage de grande ouverture sur rivière navigable). M. Bouchard. A difficult piece of work on the St. Nicholas bridge over the Oise. Ills. 2600 w. Rev gen des Chemins de Fer-March, 1913. No. 40585 G.

Forth Bridge

The Forth Bridge; Renewal of Rail-Troughs and Floor-Plates. Editorial. Remarks on the great development of traffic and description of reconstruction work to be undertaken. 1600 w. Engng -Oct. 3, 1913. No. 45862 A.

Foundations for Pitt River Bridge. Illustrated description of features of construction of this bridge in British Columbia. 1200 w. Can Engr-June 19, 1913. No. 42991.

Foundation Work on the Pitt River Bridge. Describes foundation work, under difficult conditions for a new bridge on the Canadian Pacific Ry. about 20 miles from Vancouver, B. C. Ills. 1500 w. Eng Rec—June 28, 1913. No. 43303. See also Piers and Viaducts, under

Bridges.

Highway A Three Span, Pony Truss Street Bridge With Concrete Protected Floor Over Railway Tracks. A. W. Carpenter. Describes a bridge in the city of Niagara Falls, N. Y., carrying 11th St. over the H. R. RR. Ills. 4000 w. Engng & Con
—Nov. 18, 1912. No. 37571.

A Highway Bridge With Provision for a Future Draw Span; Trail, B. C. E. E. Illustrated description of a riveted truss bridge across the Columbia River. 1500 w. Eng News-Dec. 5, 1912. No. 38064.

The Design of Various Types of Highway Bridges from the Standpoint of Modern Traffic. F. H. Neff. From a paper read before the Am. Assn. for the Adv. of Science. Discusses the effects and requirements of modern traffic. 3500 w. Engng & Con—Jan. 22, 1913. No. 39329.

Highway Bridge Over the Miami River at Elizabethtown, Ohio, That Re-sisted the Recent Flood. Illustrated description of this pin-connected, simple-truss bridge. 1800 w. Can Engr—April 17, 1913. No. 41340.

The New Highway Bridge at Rothenburg, Luzerne Canton (Die neue Strassenbrücke bei Rothenburg, Kanton Luzerne). Details of combination masonry and concrete arched bridge. Ills. 1500

Schweiz Bau-March 1, 1913. No. 40531 D.

Notes on Highway Bridge Construc-tion. F. Tissington. Remarks on the lack of uniformity in specifications, discussing the outline of truss, panel lengths, flooring, and giving tables for designers. 2500 w. Con Rec—Sept. 3, 1913. Serial, 1st part. No. 44934.

New York State Highway Department Bridges. Illustrates and describes types and details of steel girder and truss spans for suburban traffic. 1200 w. Eng Rec.—Sept. 27, 1913. No. 45481.

Highway Bridge Specifications. Gives the requirements for fabrication of steel superstructures as outlined by the U.S. Office of Public Roads. 3500 w. Eng Rec -Aug. 30, 1913. No. 44891.

See also Reinforced Concrete, Steel and

Viaducts, under *Bridges*.

Hudson River

Proposed Highway Bridge and Highway Tunnels Across the Hudson at New York. Gives the recommendations and designs recommended by the commis-sioners of the states of New York and 2000 w. New Jersey. Eng News-April 24, 1913. No. 41622.

Proposed Hudson River Bridge and Tunnels to Connect New York and New Jersey. Describes plans for an 8-track, 2880-foot suspension span and two tubes with 17-foot roadways, recommended by the Interstate Commission. Ills. 3500 w. Eng Rec-April 5, 1913. No. 41122.

Old and New Bridges in Ascoli Piceno (Vecchi ponti e Ponte nuori in Ascoli E. Cesari. Illustrations and descriptions of ancient bridges and aqueducts in this province and details of new bridge being erected. Plate. 3100 w. Ann della Soc d Ing ed Arch Ital—April 16, 1913. No. 42500 E.

Kaw River

Reconstruction of Kaw River Bridge. Illustrated description of difficult work at Kansas City, Kan., in building pile foundations on open-sheeted cofferdams. 2000 w. Eng Rec-April 19, 1913. No. 41356.

Loads

Some Experiments on Highway Bridges Under Moving Loads. F. O. Dufour. Information based on experiments carried out at the Univ. of Illinois to obtain more intelligent designs. Ills. Discussion. 5000 w. Jour W Soc of Engrs— June, 1913. No. 43764 D.

Maintenance

Bridge Maintenance. Suggestions for bridge engineers. 1500 w. Ry Age Gaz-June 20, 1913. No. 48101.

Maintenance

BRIDGES

Pontoons

Maintenance of Great City Bridges. Report of the organization and equipment for the maintenance, operation, inspection, repair and renewal of the East River bridges, New York. Ills. 4500 w. Eng Rec—Jan. 25, 1913. No. 39368.

Masonry

Some Recent American Masonry Bridges. Edward Pearce Casey. Illustrates and describes types, discussing features of design and construction. 2500 w. Am Archt—Sept. 24, 1913. 45425 C.

Material

Recent Observations on the Subject of the Use of High Quality Material in Bridge Construction (Neuere Beiträge zur Frage der Verwendung hochwertiger Materialien im Brückenbau). F. Bohny. Comments on the experiments made for the St. Louis municipal bridge, swaybracing, rivets, and compression members. Ills. 2800 w. Stahl u Eisen bers. Ills. 2800 w. Stahl Sept. 18, 1913. No. 46001 D.

New York

An Opportunity for a Bridge Across the North River at New York City. Gustav Lindenthal. From the N. Y. Explains conditions that are forcing the problem of connecting the railroads entering New Jersey with New York City, and the advantages of a bridge across the river. Also editorial. 3800 w. Eng News-Dec. 19, 1912. No. 38334.

Ohio River

The Ohio River Highway Bridge at Sewickley. V. R. Covell. Gives the history, design and erection methods. The structure has six approach spans, two anchor, and two cantilever arms and one suspended span. Ills. General discussion. 11500 w. Pro Engrs Soc of W Penn—Oct., 1912. No 38280 D.

The Beaver Bridge Over the Ohio ver. Frank W. Skinner. Illustrated detailed description of a new cantilever bridge from Monaca to Beaver, 25 miles below Pittsburgh, Ills. 3000 w. Engng -Jan. 10, 1913. Serial. 1st part. No.

39257 A.

Building Bridge Piers Adjacent to a Masonry Dam. Illustrates and describes work under construction at Cum-

berland, Md., presenting peculiar pier problems. 1200 w. Eng Rec—Nov. 30, 1912. No. 37965 Tests of Grouting Gravel in River Beds. H. H. Cartwright. Describes interesting experiments made for the purpose of determining the possibility of applying the process to the formation of pier footings.

Also editorial. Ills. 4000 w. Eng News — May 8, 1913. No. 41946.

Methods of Constructing Piers for the New Double Track Deck Plate Girder Bridge Over Cedar River at Moscow, Ia. C. E. Ziegenbein. Illustrated description of piers for an 11-span double track deck plate girder structure. 1100 w. & Con—Nov. 13, 1912. No. 37570.

Pivot Pier of Chelsea Bridge North. Illustrated description of work near Boston. A hollow concrete shaft and foundation built in a submerged basket crib. 1500 w. Eng Rec-Aug. 2, 1913. No.

44126.

Construction of New Quebec Bridge Piers. H. P. Borden. Illustrates and describes methods used in sinking very large caissons and building concrete and granite piers for St. Lawrence river structure. 2500 w. Ry Age Gaz—Aug. 29, 1913. No. 44805.

See also Quebec, under Bridges.

Plate-Girders.

The Red Deer River Bridge—Alberta Central Railway. Hugh A. Lumsden. Illustrated description of this bridge and its erection. 1200 w. Can Engr—Jan. 30, 1913. No. 39619.

of Plate-Girder Group Railroad Bridges at Akron, Ohio. Drawings and brief description. 1000 w. Eng Rec—March 29, 1913. No. 40959.

Plate Girder Bridges in Railway Construction. C. H. Marrs. Considers types in use, their advantages over other designs, their design, erection, &c. Ills. 9500 w. Can Engr—June 26, & July 3, 1913. Serial. 2 parts. No. 43679.

Mississippi River Bridge at St. Paul, C. G. W. R. R. Illustrated description of a single track structure consisting of 7 deck plate girders and one vertical lift span. 2500 w. Ry Engng & Main of Way—Aug., 1913. No. 44358.

Some Points Relative to the Design and Shipment of Plate Girders. Abstract of an article in Ap. Science, by C. H. Marrs. Ills. 2000 w. Engng & Con—Oct. 22, 1913. No. 46130.

Pontoons

The New Pontoon Bridge at Constantinople. Illustrated description of a new bridge over the Golden Horn, connecting Galata with Stambul. 800 w. Lond—Dec. 6, 1912. No. 38250 A.

Projects for a Pontoon Bridge Over the Hougli at Calcutta (Projets de Ponts flottants sur l'Hougli, a Calcutta). De-tails of plans submitted by Head, Wright-son and Co. Ills. and plate. 2800 w. son and Co. Ills. and plate. 2800 w. Génie Civil—Nov. 2, 1912. No. 37520 D.

Modern Engineering in an Ancient

Reconstruction

Eastern Capitol. F. C. Coleman. Illustrated description of the new pontoon bridge over the Golden Horn, Constantinople. 1500 w. Sci Am Sup-Jan. 25, 1913. No. 89333.

Pontoon Bridges. Henry Grattan Tyr-Considers types suitable for both fixed and moving spans, their advantages and disadvantages, cost, etc., illustrating and describing ancient and modern bridges in various parts of the world. 7000 w. Ap Sci—April, 1913. No. 42358 C.

The New Floating Bridge Over the Golden Horn at Constantinople (Le nouveau pont flottant, sur la Corne d'Or, à Constantinople). Ch. Dantin. Recently completed highway bridge to Galata with movable section. Ills. 2200 w. Genie Civil—April 19, 1913. No. 42192 D.

See Submerged Viaducts. under Bridges.

Portland, Ore.

The New O.-W. R. & N. Bridge at Portland, Oregon. W. P. Hardesty. Illustrated description of a double-deck with bridge with vertical lift, over the Willamette River, costing about \$1,700,000. 5500 w. Eng News—Dec. 12, 1912. No. 38181.

The Broadway Bridge Over Willamette River, Portland, Ore., with Ball Bascule W. R. Hardesty. Illustrated description of a bridge consisting of two Pratt-truss and four Baltimore-truss spans 125 to 297 ft. long, and a two-leaf bascule span 278 ft. long. 4500 w. Eng News—Oct. 9, 1913. No. 45798.

Quebec

The Construction of the South Main Pier of the Quebec Bridge. H. P. Bor-Illustrated description of methods of construction and conditions. 2500 w. Can Engr—Oct. 31, 1912. No. 37264.

The Construction of the South Main Pier of the Quebec Bridge. Describes the methods and the contractor's plant. Ills. 2000 w. Eng News—Nov. 7, 1912. No. 37316.

The South Main Pier of the Quebec Plan, illustrations and description of the construction work. 2500 w. Engr, Lond—Dec. 27, 1912. No. 38902 A.

Progress on Quebec Bridge Substructure. Illustrates and describes recent work and methods used in the construction. 3500 w. Eng Rec-Nov. 30, 1912.

Progress in Connection with the Construction of the Quebec Bridge. trates and describes the construction of the new piers. 1500 w. Feb. 13, 1913. No. 39824. Can Engr-

The Reconstruction of the Quebec Bridge. G. Kriwoschein. Illustrates and describes a design proposed by a Russian engineer, giving calculations showing a large saving and advantages. 1500 w.

Sci Am Sup—May 10, 1913. No. 41914. Adopted Design of the Quebec Bridge. Ralph Modjeski. Discussion of elements considered in designing the longest span in the world. Ills. 4500 w. Ry Age Gaz—Sept. 26, 1913. No. 45444.

The Construction of the Masonry for the New Quebec Bridge. A review of the construction of the piers. Ills. 2800 w. Engr, Lond—Sept. 26, 1913. No. 45744 A.

Railway

Replacing Cedar River Bridge. Illustrated account of the replacement of single-track truss bridge, by double-track spans, on the C., R. I. & P. Ry. 2000 w.

Eng Rec—Aug. 16, 1913. No. 44429. Renewing Two Double-Track Swing Spans. Illustrates and describes methods used in replacing bridges on the Jersey Central over Hackensack and Passaic rivers and rebuilding 2% miles of line. 1800 w. Ry Age Gaz—Oct. 12, 1913. No. 45917.

Bridges of the Connecticut Company. Illustrated descriptions of structures with an account of investigations, including approximate methods of determining loading. 2500 w. Elec Ry Jour—Oct. 4, 1913. No. 45712.

Calculation of Railway Bridges, Having Straight Girders and Independent Trusses (Calcul des Ponts de Chemins de Fer à Poutres Droites et à Travées Indépendantes). M. E. Pentecôte. Considers uniformly distributed loads. and plates. Serial. 1st part. 8800 w. Rev Gen des Chemins de Fer—Oct., 1912. No. 37494 G.

Reconstruction

Reconstruction of Cumberland River Bridge. Frank R. Judd. Illustrates and describes details of the flood conditions, the strengthening of the old piers and the erection of the new spans for this bridge. 2000 w. Ry Age Gaz—Nov. 1, 1912. No. 37246.

Reconstruction of the Roche-Bernard Bridge (Notice sur la Reconstruction du Pont de la Roche-Bernard). Bénézit et Tarnier. Description of triplejointed arch bridge with a span of nearly 200 meters, also history of the former bridge built in 1840, and reasons for reconstruction. Ills. and plates. 14400 w. Ann de Ponts et Chaussés—Sept.-Oct., 1912. No. 37488 E + F.

Method of Enlarging a Single-Track Swing Bridge, Substructure to Carry a

Double-Track Span. C. E. Smith, in a paper before the Am. Ry. Engng. Assn. Plans and description of work on the Little Red River bridge. 1600 w. Engng & Con—March 26, 1918. No. 40841.
Reconstruction of Kaw River Bridge.

C. E. Smith. Describes how old spans were moved transversely and endwise and another span added. Ills. 3000 w. Ry Age Gaz—July 11, 1913. No. 43662.

Reinforced Concrete

Large Reinforced Concrete Bridges in Pittsburgh. N. S. Sprague. Abstract of a paper read before the Nat. Assn. of Cement Users. Illustrates and describes important bridges and problems of design. 2000 w. Eng Rec-Dec. 21, 1912. No. 38327.

Reinforced Concrete Arches in Pittsburgh. Illustrates and describes bridges over streams, railroads, boulevards and streets, of beautiful design. 4000 Munic Engng — March, 1913. No. 40897 C.

Larimer Ave. and Atherton Ave. Concrete Arch Bridges, Pittsburgh. trates and describes these and other bridges of Pittsburgh. 3500 w. Eng News-Dec. 19, 1912. No. 38329.

Atherton Avenue Highway Bridge, Pittsburgh. Illustrates and describes the design and construction of three 90-ft. skew-span reinforced concrete arches erected on falsework trusses over railroad tracks. 2000 w. Eng Rec-May 17, 1913. No. 42215.

General Method Adopted for Constructing a 312-Ft. Reinforced Concrete Arch Bridge at Lorimer Ave., Pittsburgh, Pa. Charles H. McAlister. Illustrated detailed description of the erection of the longest span of its kind in America. 3000 Engng & Con—Jan. 8, 1913. **3**8939.

Broadway Bridge Across the Oswego River and the New York Barge Canal at Fulton, N. Y. Illustrates and describes an ornamental structure of reinforced concrete built by unusual methods on the site of an existing steel bridge. 2500 w. Eng Rec—Jan. 25, 1913. No. 39365.

Recent Applications of Concrete and Reinforced Concrete in the City of Pittsburgh. N. S. Sprague. Read before the Nat. Assn. of Cement Users. Relates to the application of reinforced concrete to bridge repairs and new construction. Ills. 5500 w. Cement—Dec. 1912. No. 41150 C.

Recent Wide-Spanned Reinforced Concrete Bridges (Neuere weitgespannte Eisenbetonbrücken). Theodor Gesteschi. The first number describes the Larimer Street arch bridge in Pittsburgh. Ills.

Serial, 1st part. 1900 w. Beton u Eisen -March 14, 1913. No. 41429 E.

Concrete Highway Bridge at Ansonia. Connecticut. Drawings and description of a reinforced concrete and steel girder bridge under construction. 1500 w. Eng

Rec—Feb. 22, 1913. No. 40106.

Method of Constructing a Reinforced
Concrete Arch Bridge of Six 70-foot Spans for Electric Railway Service. Illustrated description of methods used for a bridge near Waterloo, Ia., designed to meet steam railway service. 1200 w. Engng & Con—March 5, 1913. No. 40346. Reinforced Concrete Highway Bridges.

George H. Herrold. Illustrates and de-

scribes types and their construction. 2200 w. Jour Assn of Engng Socs—Feb., 1913. No. 40089 C.

The Designing and the Methods and Cost of Constructing a Flat Slab Reinforced Concrete Highway Bridge. E. W. Robinson. Sections and description of a bridge subject to considerable heavy traffic. 1500 w. Engng & Con-March 5, 1913. No. 40345.

A Reinforced Concrete Railroad Bridge. W. P. Day. Illustrated description of a structure across the American River, near Auburn, Cal. 1500 w. W Engng-May, 1913. No. 42271 C

The Yardley Bridge Across the Delaware River, Philadelphia & Reading Ry. Illustrates and describes the design and construction of one of the largest two-track concrete railway bridges in exis-tence. 4500 w. Eng News—May 29, No. 42560. 1913.

Four-Span Reinforced Concrete Deck Plate Girder Bridge, Typifying Illinois Highway Commission Practice. Illustrates a structure constructed according to present standards. 2000 w. Engng & Con—July 9, 1913. No. 43613.
Colorado Street Bridge Over the Ar-

royo Seco, Pasadena, Cal. Illustrated description of a reinforced concrete bridge under construction. The arches are of especially light form, and a peculiar system of centering, curved plan and low cost are some of the points of interest. 1800 w. Eng News-July 24. 1913. No. 43878.

Washington Street Bridge in Norwalk, Conn. Illustrated description of a bridge having ten reinforced-concrete spans and one double-leaf bascule, plate-girder span. 1500 w. Eng Rec-July 26, 1913. No.

Gunpowder and Bush River Bridges. Illustrates and describes double-track reinforced concrete structures on the Pennsylvania R. R. with 295 short spans on pile foundations in deep mud. 2000 w. Eng Rec—Aug. 9, 1913. No. 44236.

Santa Ana Reinforced Concrete Arch Bridge. W. M. Thomas. Illustrated description of this three-hinged arch bridge in California. 1000 w. W Engng—Oct., 1913. No. 46360 C.

Ferro-Concrete Bridge Over the River Lagan. Illustrated description of the new Stanmillis Bridge in Belfast, Ireland. 1200 w. Engr, Lond—May 9, 1913. No. 42293 A.

Reinforced Concrete Bridges in the Bavarian Forests (Eisenbetonbrücken im Bayerischen Wald). C. F. Müller. First part gives details in the design of a footbridge over the Regen. Ills. Serial. 1st part. 1800 w. Beton u Eisen—Oct. 21, 1912. No. 37432 E.

The Nassentelle Bridge at Lauscha (Brücke Nassentelle bei Lauscha, S.-Mein.). M. Rudiger. Details in construction of composite masonry and reinforced concrete. Ills. 3200 w. Beton u Eisen—Jan. 20, 1913. No. 40031 E.

Highway Bridge Over the Möhne Valley at Korback (Strassenbrücke über das Möhnetal bei Körbecke). Herr Lewe. Details of bridge with masonry piers and reinforced concrete arches. Ills. 2600 w. Beton u Eisen—Feb. 13, 1913. No. 40525 E.

The 200-Meter Reinforced Concrete Viaduct Across the Lister Valley at Stein (200 m langer Eisenbetonviadukt über die Listertalsperre bei Stein). Viktor Mautner. The calculations and design of the reinforced concrete bents and flooring. Ills. 1600 w. Beton u Eisen—Feb 26, 1913. No. 40527 E.

The Ems-Weser Canal and Its Reinforced Concrete Structures (Der Ems-Weser-Kanal und seine Eisenbetonbauten). Herr Hart. Describes chiefly the reinforced concrete bridges along the canal. Ills. Serial. 1st part. 2800 w. Beton u Eisen — April 1, 1913. No. 41431 E.

Bridge over the Lahn near Graveneck (Brucke uber die Lahn bei Gräveneck). Herr Schluckebier. Description of a 300-foot three-span reinforced-concrete arch bridge. Ills. 2600 w. Beton u Eisen—June 12, 1913. No. 43521 E.

The Construction of the Walche Bridge in Zürich (Zum Bau der Walchebrücke in Zürich). Fritz Locher. Details of caisson and pier foundation work, spacing of reinforcement, forms, etc. Ills. 1800 w. Schweiz Bau—July 5, 1914. No. 44640 D.

The Aar Bridge at Aarburg (Die Aare-Brücke bei Aarburg). O. Zehnder. Description of long single-span reinforced concrete bridge replacing a wire suspen-

sion bridge. Ills. 2000 w. Schweiz Bau
—July 26, 1913. No. 44641 D.

The Halen Reinforced-Concrete Bridge, Berne, Switzerland. Illustrated description of its design and construction. 4500 w. Eng News—Sept. 18, 1913. No. 45218.

Two Reinforced Concrete Railway Bridges (Zwei Eisenbahnbrücken aus Eisenbeton). Robert Berman. Plans and construction details of two new bridges in Bremen. Ills. Serial, 1st part. 700 w. Beton u Eisen—Oct. 2, 1913. No. 46031 E.

Reinforced Concrete Bridge at Rome. Illustrated description of the armored-concrete bridge over the Tiber, notable as one of the largest arches in the world. 3000 w. Engr, Lond—May 16, 1913. No. 42545 A.

See also Arches, and East Haddam, Conn., under Bridges.

Reinforcing

Supporting a Large Derrick from a Steel Bridge Tower. Illustrated description of methods used in reinforcement of the Williamsburg bridge, across the East River, at New York. 1500 w. Eng Rec. —Dec. 21, 1912. No. 38324.

Removal

Moving the Union Pacific Kaw River Bridge. Illustrated detailed description of work at Kansas City, including the removal of two 180-ft. spans of the double-track, pin-connected bridge, each weighing 550 tons. 1200 w. Eng Rec— May 31, 1913. No. 42643.

Renewals

An Interesting Method of Bridge Renewal. Illustrated description of the replacing of a single track through truss bridge over the Cedar River, near Moscow, Iowa, with a double-track dear Moscowier structure, without interruption of traffic. 1000 w. Ry Age Gaz—April 18, 1913. No. 41350.

Renewing Two Swing Spans Under Traffic. Illustrates and describes the use of open timber caissons in building concrete piers for bridges on the Grand Trunk Ry. at Lacolle, Que., and Portland, Me. 1500 w. Ry Age Gaz—June 20, 1913. No. 43103.

Replacement

Replacing the Yardley Bridge. Illustrated description of interesting work at Yardley, Pa., on the P. & R. Ry. 2000 w. Eng Rec—May 3, 1913. No. 41846.

Method of Replacing a Five-Span

Method of Replacing a Five-Span Through Truss Bridge with Deck Plate Girder Spans, Chicago & Alton Railway. Illustrated description of work at Wilmington, Ill. 1600 w. Engng & Con— May 28, 1913. No. 42518.

New Ohio River Bridge at Kenova, W. Va. Illustrated account of the replacing of a five span, double track, through truss structure on some piers without interrupting traffic. 5000 w. Ry Age Gaz—Sept. 5, 1913. No. 44980.

Replacing the Cuyahoga River Draw Bridge. Illustrates and describes the

Replacing the Cuyahoga River Draw Bridge. Illustrates and describes the erection of a double track bascule span in balanced vertical position over traffic by means of sliding travelers. 1600 w. Eng Rec.—Jan. 4, 1913. No. 38804.

Roadways

A Comparison of the Different Types of Wearing Surfaces Used for the Roadways of Bridges. Henry B. Browne. From a report to the Int. Road Congress, London. Deals with qualities and cost of different types. 4000 w. Engng & Con—July 9, 1913. No. 43611.

Sawing
Sawing a Bridge with a Wire. Jacques
Boyer. An illustrated account of how the
old Pont Neuf was sawn apart. 800 w.
Sci Am—Sept. 20, 1913. No. 45232.

Scherzer

Twin Scherzer Bridges at Dublin. Explains conditions when the bridges were erected, and illustrates and describes the new bridges and their operation. 1800 w. Engr, Lond—Sept. 19, 1913. No. 45572 A.

40072 A. Steel

The Use of High Grade Steel for Bridge Material (Die Verwendung hochwertigen Stahles als Brückenmaterial). Rudolf Schanzer. Arguments on the use of nickel-steel, and comparison of American and German nickel-steel. Ills. 5500 w. Zeit des Oest Ing u Arch Ver—Feb. 28, 1913. No. 40550 D.

Some Necessary Precautions in the Design and Supervision of Construction of Low-Truss Steel Highway Bridges. G. M. Braune. Gives conclusion drawn from numerous highway bridge failures; precautions when using heavy concrete floors and other details. 1500 w. Eng News—Aug. 28, 1913. No. 44881.

See also Arches, Railway and Viaducts,

under Bridges.

St. Lawrence

Erecting the St. Lawrence River Bridge. Explains conditions which made it advisable to use a very small amount of falsework in the erection of the super-structure. Ills. 2000 w. Ry Age Gaz—May 9, 1913. No. 41948.

The Canadian Pacific Railway Bridge Over the St. Lawrence River at Lachine. W. P. Murray. Brief illustrated description of some of the interesting problems solved in the erection of this bridge over the St. Lawrence River. 1000 w. Can Engr—Aug. 7, 1913. No. 44279. it. Louis

Municipal Bridge Approach, St. Louis. S. W. Bowen. Describes the viaduct approach for railway and steel connections at the St. Louis end of the bridge, with the methods of construction. Ills. 5500 w. Eng News—Jan. 16, 1913. No. 39196. Submerged Viaducts

Floating Tunnels and Submerged Viaducts. Henry Grattan Tyrrell. Discusses the merits and possibilities of such structures. 3500 w. Marine Rev—June,

1913. No. 42807 C.

Substructures

Method of Constructing a Bridge Superstructure on Soft Bottom. From a paper by C. E. Smith, before the Am. Ry. Engng. Assn. Describes pier reconstruction on a bottom so soft that the driving of adjacent piling caused movement of the old pier. 2700 w. Engng & Con—March 26, 1913. No. 40842.

Difficulties in Placing the Substructure for a Swing Bridge. Describes work on a bridge across the Passaic River at Newark, N. J., in which a cofferdam of wood and sheet steel piling was used for deep river-bed excavations. Ills. 2000 w. Eng Rec—March 8, 1913. No. 40370.

Some Constructive Features of the Substructure of the Cumberland River Bridge, L. & N. Ry. Howard M. Jones. Explains conditions and describes construction methods. Ills. 2500 w. Eng. News.—May 22, 1913. No. 42349.

News—May 22, 1913. No. 42349.

Substructure for East River Bridge Division, New York Connecting Railway. Describes the building of high concrete piers and retaining walls and deep caisson foundations for three and one-half miles of four-track viaducts and bridges. Ills. 3000 w. Eng Rec—Sept. 20, 1913. No. 45270.

Suspension

Superstructure and Erection of the Messena Center Bridge. Illustrated description of a suspension bridge with 400-ft. central span erected without steam power. 2500 w. Eng Rec—Nov. 2, 1912. No. 37223.

A Famous English Chain Suspension Bridge. Illustrated description of the Clifton suspension bridge over the River Avon, at Bristol, Eng. 1000 w. Eng News—Jan. 30, 1913. No. 39589.

Notes on the Calculation of Suspension Bridges Stiffened by Cable Supports and Rigid Girders (Note sur le calcul des ponts suspendus rigides à haubans et poutre de rigidité). H. Lossier and Maurice Pernollet. Mathematical study of formulae. Ills. Serial, 1st part. 4000 w. Genie Civil—Feb. 1, 1913. No. 40071 D.

Suspension

Stiffening Members in Suspended Bridges (Etude des poutres raidissantes dans les ponts suspendus). E. Lebert. A study of the Gisclard system of suspension. Ills. 16000 w. Ann d Ponts et Chaussées — Jan., 1913. No. 41507

Suspension Bridges and Cantilevers. D. B. Steinman. Read before the Cong. of Engng. Socs. at Spokane, Wash. A discussion of the relative economy of these two forms of construction. 3500 w. Eng Rec—May 17, 1913. Serial. First part. No. 42218.

A Comparative Study of Limiting Span, Maximum Span and Economic Span for Suspension Bridges and Cantilever Bridges. D. B. Steinman. Discussion at the Congress of Engineering and Scientific Societies at Spokane, Wash. Ills. 5000 w. Engng & Con—May 7, 1913. No. 41908.

The Repairs to the Menai Suspension Bridge. Edward George Rivers and Edward Harold Morris. Describes the bridge and its condition, and the method of carrying out the repairs. Plates. 19 pp. Inst of Civ Engrs—No. 3984. No. 42373 N.

Fixed Gisclard Suspension Bridge over the Luzège, Corrèze (Pont suspendu fixe, système Gisclard, sur la Luzège, Corrèze) G. L. Le Cocq. Illustrated description of this new railway bridge of 140 meters span, showing method of construction. Plate. Serial. 1st part. 4000 w. Genie Civil—May 31, 1913. No. 43085 D.

Swing Span

Southern Pacific Bridge at Sacramento. Illustrates and describes a double-track, double-deck structure, with highway on upper level—believed to be the heaviest swing span ever built. 2500 w. Ry Age Gaz — April 11, 1913. No. 41177.

Vancouver

New Bridges at Vancouver, British Columbia. This first article of a series illustrates and describes the Westminster Avenue bridge. Plate. 1000 w. Engr, Lond—Jan. 10, 1913. Serial. 1st part. No. 39272 A.

Viaducts

Construction Features of the Kingshighway Viaduct, St. Louis, Missouri. Illustrates and describes reinforced concrete arches with hollow piers and retaining wall approaches. 2200 w. Eng Rec.—Nov. 25, 1912. No. 87756.

Rec.—Nov. 25, 1912. No. 37756.

Method of Designing Arches, Kingshighway Viaduct, St. Louis. Drawings and explanation of the method of design as given in a paper by A. C. Janni, read before the Engineers' Club of St. Louis.

1000 w. Eng Rec—Feb. 1, 1913. No. 39648.

Viaducts

Construction of the Concrete Viaduct Between Dallas and Oak Cliff, Texas. E. N. Noyes. Illustrates and describes methods used in building a girder and arch structure 6562 feet long. 3500 w. Eng Rec—Nov. 9, 1912. No. 37355. Methods and Cost of Constructing the

Methods and Cost of Constructing the Stony Brook Glen Viaduct, Pittsburg, Shawmut & Northern Railway. H. S. Wilgus. Illustrated description of this structure, between Hornell, N. Y., and Wayland, N. Y. 1200 w. Engng & Con—Nov. 20, 1912. No. 37705.

Milwaukee's Concrete Viaduct. Duane Mowry. Illustrated description of this ten-arch viaduct and its construction. 1800 w. Munic Jour—Oct. 31, 1912. No. 37177.

Penn Street Viaduct at Reading, Pennsylvania. Illustrated account of the replacing of a steel viaduct by a concrete structure on the same center line without serious interruption to traffic. 2200

w. Eng Rec—Nov. 30, 1912. No. 37966.
Construction of the Fifth Street Viaduct, Fitchburg, Massachusetts. Illustrated description of the erection of a concrete highway structure 650 ft. long, with spans supported by the reinforcement steel without falsework during construction. 2000 w. Eng Rec—Jan. 4, 1913. No. 38799.

The Fifth Street Viaduct, Fitchburg, Mass. Illustrated description of a reinforced concrete structure and its erection. 2500 w. Eng News—March 6, 1913. No. 40351.

The Hapuawhenua Viaduct, New Zealand. Frederick William Furkert. Describes a railway viaduct built on a curve of 660 ft. radius. A steel superstructure on concrete piers and base blocks. 1800 w. Inst of Civ Engrs—No. 3891. No. 39296 N.

Repairing Cracks in the Viaduct of a Hundred Arches by Cement Jets (Consolidation par injection de ciment du Viaduc des cent Arches). M. Adam. The nature of the work, type of pump used, and results. Ills. 1750 w. Rev Gen des Chemins de Fer.—Feb., 1913. No. 40064 G.

Method and Unit Costs of Constructing Piers and Abutments for a High Steel Viaduct for the Fort Dodge, Des Moines & Southern (Electric) Ry. C. J. Steigleder. Illustrated description of the work. 2500 w. Engng & Con—March 19, 1913. No. 40733.

Gilbert Avenue Viaduct in Cincinnati. Illustrated description of a reinforced concrete structure of steel and girder de-

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sign, showing architectural effects obtained by use of false arches. 2500 w. Eng Rec—March 1, 1913. No. 40266.

The Superior Avenue Viaduct, Cleve-

The Superior Avenue Viaduct, Cleveland. B. F. Morse. Interesting information relating to this viaduct. 3000 w. Jour Cleveland Engng Soc—March, 1913. No. 40867 C.

A Reinforced Concrete Viaduct for Heavy service. B. H. Davis. Illustrated description of a large reinforced concrete viaduct in Allentown, Pa., and construction details. 3500 w. Concrete-Cement Age—April, 1913. No. 41252. The South Eighth Street Viaduct, Al-

The South Eighth Street Viaduct, Allentown, Penn. Illustrated description of a large reinforced-concrete viaduct crossing the valley of the Little Lehigh River, and details of its construction. 2500 w. Eng News—April 17, 1913. No. 41332.

Replacing a High Timber Trestle with a Steel Viaduct. Illustrates and describes work on the Fort Dodge, Des Moines & Southern Ry. 2500 w. Eng News—April 24, 1913. No. 41620.

Two Big Concrete Viaducts. Illus-

Two Big Concrete Viaducts. Illustrated account of work on the Pennsylvania R. R. bridging the Gunpowder and the Bush Rivers in Maryland, with double-tracked reinforced-concrete viaducts. 1500 w. Mfrs' Rec—April 24, 1913. No. 41608.

1913. No. 41608.

The 240 Meter Factory Railway Viaduct of Reinforced Concrete in Pöchlarn on the Danube (Der 240m lange Schleppbahnviadukt aus Eisenbeton in Pöchlarn an der Donau). Leo Kauf. Plan and construction details of curved viaduct, and precautions against expansion. Ills. 2500 w. Zeit des Oest Ing u Arch Ver — March 14, 1913. No. 41473 D.

Foundations for the Tunkhannock Viaduct. Illustrates and describes the design and construction of the substructure of this great concrete bridge of the Lackawanna R. R. 5000 w. Eng Rec—May 3, 1913. No. 41843.

Weldon Viaduct Over the Roanoke River. Illustrated description of a steel structure in North Carolina built by the Atlantic Coast Line. 1000 w. Ry Age Gaz—May 2, 1913. No. 41804.

The Bietsch Valley Viaduct of the Lötschberg Railway (Der Bietschtal-Viadukt der Lötschbergbahn). Adolf Herzog. General description of a light steel truss spanning a deep canyon on a curve, with unusual arrangement of bents and arch supports. Ills. Serial. 1st part. 1100 w. Schweiz Bau—April 19, 1913. No. 42132 D.

The Design and Erection of the Boucanne Viaduct of the National Transcontinental Railway. P. L. Pratley. Drawings and description of this viaduct in Quebec, Canada. 4000 w. Engng & Con—June 18, 1913. No. 42941.

The Boucanne River Viaduct. P. L. Pratley. Illustrates and describes features of design and erection of this railway viaduct in the province of Quebec. 4000 w. Can Engr—Aug. 21, 1913. No. 44570.

The Georgia-Harris Viaduct, Vancouver, B. C. Describes a very long viaduct of somewhat peculiar design under construction on the line of Georgia and Harris Sts. Ills. 1400 w. Eng News—Aug. 21, 1913. No. 44573.

See also Arches, and Submerged Viaducts, under Bridges.

Widening

The Widening of Blackfriars Bridge. David Anderson and Harry Cunningham. Illustrated description of methods employed in the work, plant, cost, etc. Plates. 24 pp. Inst of Civ Engrs—No. 3980. No. 42372 N.

Wooden Bridges

Report of Committee VII—On Wooden Bridges and Trestles. Gives detailed report with conclusions and recommendations. Ills. 6500 w. Bul Am Ry Engng Assn—Jan., 1913. No. 40222 F.

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Acoustics

Acoustic Design in the Hill Memorial Auditorium, University of Michigan. Hugh Tallant. Gives an outline of the principles and methods by which the results were obtained. Ills. 3000 w. Br Build—Aug., 1913. No. 44599 D.

Air Pressures

Labor Regulation in Compressed Air (La réglementation du travail dans l'air comprimé). J.-P. Langlois. A study of the precautions to be taken for the safeguarding of workmen. Compression

period, period of labor, and decompression period. 5400 w. Tech Mod—April 1, 1913. No. 41521 D.

Arch Design

Points in the Design of Arches in Ferro-Concrete. R. N. Stroyer. Deals mainly with the fixed-end arch. Ills. 2500 w. Engng—April 25, 1913. No. 41929 A.

Buildings

Construction of the Bigelow Building. Describes work in Boston, where a new store was erected on the site of the old

one without stopping business. 2000 w. Eng Rec—Dec. 14, 1912. No. 38199.

The Tallest Building in the World. Frank W. Skinner. General illustrated description of the Woolworth Building, its steel work, pneumatic caisson construction, cellar excavation, floor construction, etc. 5000 w. Cornell Civ Engr—Jan., 1913. No. 39392 C.

The Tallest Office Building in the World. Illustrated description of the erection of the Woolworth Building, New York. 2500 w. Sci Am—March 8, 1913. No. 40359.

Engineering Design of the Woolworth Building. Cass Gilbert, Architect. With some general remarks on engineering problems as affected by the New York building code. By Grunwald Aus. Plates. 3500 w. Am Archt—March 26, 1913. No. 40845 C.

1913. No. 40845 C.
The Guaranty Trust Company's New Building, New York City. Eugene W. Stern. Illustrated description of interesting problems in the foundation and steel construction. 2500 w. Eng News—

Aug. 7, 1913. No. 44251.

Dome of the Wisconsin Capitol. Describes in some detail the dome of the new capitol, the structural design of the steel framework presenting unusual problems. Ills. 4000 w. Eng News—Aug. 28, 1913. No. 44880.

28, 1913. No. 44880.

The Skyscraper of the Future. David H. Ray. Discusses recent progress in building construction. Ills. 2800 w. Sci Am Sup—March 8, 1913. No. 40399.

Machinery Hall, Panama-Pacific Exposition. Discusses the loads and strains and other matters in connection with one of the largest timber structures ever erected. It has a floor area of 8 acres and must be completed in 240 days. 2500 w. Eng Rec—Aug. 30, 1913. No. 44894.

A Half Mile of Concrete Barracks. R. McC. Beanfield. Describes methods and materials used in building reinforced-concrete barracks in Manila Bay, Philippine Is. Ills. 2000 w. Concrete-Cement Age—Oct., 1913. No. 45823.

pine Is. Ills. 2000 w. Concrete-Cement Age—Oct., 1913. No. 45823.

Construction of the New Museum, "Les Galeries Lafayette," in Paris (La construction des nouveaux batiments des magazins "Les Galeries Lafayette," à Paris). Robert Altermann. Precautions taken against extraneous water percolation in the underground structures, and details of reinforced concrete stairway. Ills. and plate. 2400 w. Génie Civil—Oct. 19, 1912. No. 37517 D.

New Building for the Sulfit-Zellstoff Co. at Maltsch (Der Neubau der Sulfit-Zellstoff-Fabrik zu Maltsch a. O.). Wilhelm Iwand. Detailed description of new reinforced concrete paper mill. Ills. 2200. w. Beton u Eisen—Nov. 27, 1912. No. 38427 E.

The New Building of the Institution of Civil Engineers. Illustrations and brief description of the new building in London. 500 w. Engng—Aug. 15, 1913. No. 44724 A.

The Reinforced-Concrete Construction of the Church of St. Mary at Offenbach am Main (Die Eisenbetonkonstruktionen an der St. Marienkirche in Offenbach am Main). Jean Wörrlein. General outline of the type of structure under construction. Ills. 2000 w. Beton u Eisen—Dec. 14, 1912. No. 39017 E.

The New City Theater at Duisburg (Das neue Stadttheater in Duisburg). Viktor Mautner. Plans, illustrations and details of this reinforced concrete theater. Plates. Serial. 1st part. 3200 w. Beton u Eisen—Dec. 14, 1912. No. 39015 E.

The Scientific Erection of the Leonhard Tietz Store in Brussels (Die technischen Einrichtungen des Warenhauses Leonhard Tietz in Brüssel). X. Werner. Description of heating and lighting system of a large store. Ills. 3000 w. Zeit des Ver deutscher Ing—Feb. 22, 1913. No. 40543 D.

The A. M. Luther Wood-Working Shop in Reval (Die Tischlereihalle A. M. Luther in Reval). O. Lüscher. Details of mammoth reinforced concrete factory building. Ills. 3900 w. Beton u Eisen —March 14, 1913. No. 41428 E.

The Aesthetics of Industrial Buildings. Peter Behrens. Brief discussion of the design. Ills. 1600 w. Sci Am Sup— Aug. 23, 1913. No. 44504.

Recent Developments Affecting School Building. Percy Morris. Reviews briefly the history of school planning in England since the end of the 18th century, and discusses playgrounds and sites, ventilation and heating, planning and the cost of school buildings. Ills. 10500 w. Jour Roy Inst of Brit Archts—Aug. 30, 1913. Serial. 1st part. No. 45872 N.

Some Effects from the Atmosphere Upon Buildings (Ueber einige Einwirkungen der Atmosphöre auf Bauten). Vincenz Pollack. Chiefly discussing the effects of frost upon foundations and masonry work. Ills. 4000 w. Zeit des Oest Ing u Arch Ver—July 18, 1913. No. 46045 D.

See also Concrete, Factories, Test Buildings, Skyscrapers, Foundations and Reinforced Concrete, under Construction.

Building Laws

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Building Laws

Municipal Building Laws in the United States. R. Fleming. An article based on a review of the codes of 35 cities, confined to features relating to the design of steel frames of tall buildings of fire-proof construction. 5000 w. Eng News —July 3, 1913. No. 43434.

Unwritten Law. The Manton E. Hibbs. Urges the taking of structural details out of the law, incorporating them in regulations subject to change with the advancement in the art of building. Discusses building laws in large cities. Ills. 6000 w. Pro Engrs' Club of Phila—July, 1913. No. 44335 D.

An Economical Plant for Sand and Gravel. Robert M. Hale. Illustrates and describes the application of modern methods to the solution of bunker problems in Vancouver, B. C. 4000 w. Cement & Eng News—Oct, 1913. No. 45822.

Caissons

Pneumatic Caissons for Tall Buildings. O. W. Ross. Reviews the history of pneumatic processes, the general principles of caissons, underpinning, caisson construction and operation, etc. Ills. 5000 w. Ap Sci—Jan., 1913. Serial, 1st part. No. 39948 C.

Methods and Costs of Constructing the Caisson Foundations for a Steel Skeleton Building in Chicago. tion. Ills. 1600 w. Detailed descrip-Engng & Con-

Oct. 22, 1913. No. 46134.

Caisson for the New Gladstone Dock at Liverpool. Illustrated description of the caisson and hauling machinery associated with it. 1000 w. Engng—Oct. 17, 1913. No. 46245 A.

Camp Sanitation

The Sanitation of Construction Camps. Harold Farnsworth Gray, Jr. States some of the principles of sanitation applicable to camp conditions. Ills. 4000 w. Pro Am Soc of Civ Engrs—Nov., 1912. No. 38289 F.

Cement Gun

Notes on the Operation of the Cement un. Otto J. Swensson. Information from personal experience, and the study of a series of tests made by a reliable en-gineering company. Ills. 2500 w. Eng News—Dec. 12, 1912. No. 38176. The Cement Gun. William A. Jordan.

Illustrated description of this method of handling and placing cement under mortar. 3000 w. Jour Worcester Poly Inst.—March, 1913. No. 40863 C.

See Stacks, under MECHANICAL ENGI-NEERING, Steam Engineering.

See Irrigation, under Water Supply.

Cofferdams

Method of Constructing Cofferdam on Shifting Bottom; Ohio River Dam No. 48. An illustrated account of the methods followed, abstracted from a paper by J. C. Oakes, in "Prof. Mem." 1500 w. Engng & Con—March 19, 1913. No. 40729.

Columns

Columns in the New Grand Central Terminal, New York City. Illustrated description of special members in towers supporting the twenty-three story office building over the main concourse. 1200 w. Eng Rec—Feb. 1, 1913. No. 39646.

Comparison of Column Formulae. E. L. Lasier. A comparative study of the collected formulae in use. 1200 w. Eng

Rec-July 12, 1913. No. 43657.

The Deflection Method of Calculating the Strength of Columns and Stanchions. A. J. Murray. Explains a fundamental misconception in the Moncrief formula, which has been accepted as the basis of the U. S. Navy instructions for determining the scantling of ship columns. 1800 w. Int Marine Enging—July, 1913. Serial, 1st part. No. 43420C.

Columns. O. H. Basquin. Discusses principally how it may happen that a column which is built for an axial load may actually or virtually receive an eccentric load. General discussion. Ills. 96 pp. Jour W Soc of Engrs—June, 1913.

No. 43763 D.

Reinforced Cast Iron, Dr. v. Emperger's System (Umschnürtes Gusseisen, System Dr. v. Emperger). H. Nitzsche. Cast iron columns given extra strength by a coating of concrete, this coating wrapped with steel wire, and a surface coat of cement. Tables of bearing loads. Ills. Giess Zeit-Sept. 1, 1913. No. 3500 w. 46019 D.

See also Reinforced Concrete, under Materials of Construction.

Compressed Air

The New York Law Governing Work Compressed Air. Gives the amended law governing the conditions under which labor may be employed under compressed-air pressure. 1700 w. Eng News—Aug. 14, 1913. No. 44374. See also Tunnel Linings, under Con-

struction.

Concrete

A Concrete Stadium for a Public School Athletic Field. Harold L. Alt. Illustrated description of work on the large athletic field in Brooklyn, N. Y. 3500 w. Concrete-Cement Age — Nov., 1912. No. 37585.

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Ornamental Use of Concrete in Playground Structures. Illustrates and describes effects obtained in Hoboken park improvement. 1500 w. Concrete-Cement Age—Dec., 1912. No. 38150.

Concrete Practice, No. 5, C., C., C. & St. L. Ry. Co. Illustrates and describes effectives adopted as a trade-describes.

Concrete Practice, No. 5, C., C., C. & St. L. Ry. Co. Illustrates and describes structures adopted as standard and used by the Big Four Ry. 3500 w. Ry Engng & Main of Way—Dec., 1912. No. 38339.

Patents Relating to Concrete Construction. From a summary by Walter M. Denman, presented to the Nat. Assn. of Cement Users. Deals with features of concrete patents, bridges, buildings, dams, retaining walls and sewers. 2500 w. Eng Rec.—Jan. 18, 1913. No. 39189.

Concrete in Railroad Work. Frederick Auryansen. Abstract of a paper before the Nat. Assn. of Cement Users. Illustrates and describes work on the Long Island R. R. 2500 w. Concrete-Cement Age—Jan., 1913. No. 39219.

Concrete Grain Elevator Construction.

Concrete Grain Elevator Construction. R. P. Durham. Read before the Nat. Assn. of Cement Users. Reviews the progress, especially the building of bin walls with moving forms. 3500 w. Concrete Cement Age. Jan. 1913 No. 39220

walls with moving forms. 3500 w. Concrete-Cement Age—Jan., 1913. No. 39220.
Concreting the Floors and Columns in the Butler Brothers Building, Chicago. Describes a special plant for mixing and handling 500,000 cubic yards of concrete in a 23-story building. Ills. 1500 w. Eng Rec.—Jan. 11, 1913. No. 38959.

Wrecking a Four-Story Concrete Building in Chicago. Illustrated description of methods used. Oxy-acetylene torches now used to cut the concrete as well as the metal parts. 800 w. Eng Rec.—Feb. 15, 1913. No. 39864.

The Relation of Inspectors and Contractors with Reference to Concrete Construction. Jerome Cochran. Discusses the characteristics and work of inspectors, especially in regard to concrete construction, to determine the most harmonious relations between them and the contractor. 7500 w. Cornell Civ Engr—March, 1913. No. 40876 C.

Concrete Practice No. 6, Kansas City Southern Ry. Co. A. M. Wolf. Describes and illustrates structures of concrete and reinforced concrete that have been adopted as standard. 3000 w. Ry Engng & Main of Way—March, 1913. No. 40791.

The Fundamentals of Concrete Design. E. Brown. Considers the essentials of good design and the requirements of reliability. 2000 w. Con Rec—May 14, 1913. No. 42087.

A Method of Proportioning Concrete. William B. Hunter. Outlines methods in use and gives details of the method favored by the writer. 2000 w. Eng

News—May 8, 1918. No. 41944.

The Protection of Concrete Structures from Alkali and Other Destructive Agents. W. D'Rohan. Information concerning the resisting powers of various cements and the protective measures. 2500 w. Engng & Con—May 21, 1913. No. 49308

Eight-Story Concrete Building without Interior Columns. H. D. Loring. A building in Cincinnati, O., is described. Ills. 1500 w. Eng Rec—May 31, 1913. No. 42647.

Experience with Concrete in Fires. G. E. Fisher. Reviews lessons from the Baltimore and San Francisco fires. Discussion. 2500 w. Jour Am. Soc of Mech Engrs—June, 1913. No. 42960 D.

Manure as a Protection for Concrete. Newell G. Alford. Gives results of a trial in utilizing the heat-producing qualities of fresh horse manure in setting of concrete during severe winter weather. Ills. 1600 w. Coal Age—June 21, 1913. No. 42995.

Poured Concrete Houses in France. Illustrated description of a system in which the forms for the whole building are set up and casting done in one operation. 1700 w. Concrete-Cement Age—May, 1913. No. 42014.

The New Barracks at Tolmein (Die neuen Kasernen in Tolmein). Hans Wyss. Details in L-block construction, and methods of making blocks. Ills. 2500 w. Beton u Eisen—Oct. 21, 1912. No. 37430 E.

See also Foundations, under Construction; Concrete, under Materials of Construction; Concrete, under Roads and Pavements; Dikes, and Wharves, under Waterways and Harbors.

Concrete Buildings

Constructing a Ten-Story Concrete Building. Illustrated description of the construction of a large factory in Long Island City, N. Y., including the placing of 35,000 yards of concrete in floors and columns, bending reinforcement rods by power, and handling beam and girder forms. 2500 w. Eng Rec—Sept. 20, 1913. No. 45268.

See also Factories, under Construction.

Concrete Forms
Steel Forms for Concrete Construction.
William Mayo Venable. First of a series of articles, deals with application of steel forms to conduits, culverts and drains.
Ills. 3000 w. Concrete-Cement Age—
Jan., 1913. No. 39217.

Steel Forms for Concrete Construction. From an article by William Mayo Ven-

Concrete Mixers

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able in The Cement World. Describes the application of steel in the construction of forms for engineering work, especially for sewers, drains, conduits, tunnels, etc. 2500 w. Can Engr—March 20, 1913. No. 40787.

Concrete-Mixers

Chain-Belt-Driven Concrete-Mixer. Illustrated description of a mixer of the portable type, built in England. 1000 w. Engng—March 21, 1913. No. 41017 A.

Mixing Plants for Bituminous Concrete. A. F. Gruenenthal. Descriptions of permanent, portable and semi-portable plants used for work on roads in Queens Borough, New York. 4000 w. Munic Jour—July 10, 1913. No. 43499.

Concrete Plant

A Concrete Mixing and Chuting Plant With a Folding Tower and Mounted on a Flat Car for Retaining Wall Construction. Illustrates and describes a plant of unusual interest being operated on track elevation work in Chicago. 1500 w. Engng & Con-June 11, 1913. No. 42795.

Concrete Roofs

Methods and Costs of Insulating Concrete Roofs Against Condensation. Albert M. Wolf. Deals with practical and economical methods which have been used to insulate concrete roofs, and the particular kind of insulation applicable to each type of building. Ills. 8000 w. Engng & Con—Aug. 20, 1913. No. 44497. Construction Camps

Construction Camp at Arrowrock Dam. Alfred B. Mayhew. Illustrated account of how necessities and amusements are provided for 1400 workers located 20 miles from Boise, the nearest city. 4000 w. Eng Rec—Aug. 2, 1913. No. 44123.

Construction Plant

Construction Plant for the Third Lock at Sault Ste. Marie, Mich. Illustrated description of the material plant, mixer plant, haulage system, etc. 1500 w. Eng Rec—Dec. 21, 1912. No. 38322.

Storage System for Construction Plant. Describes a storage plant at Greenpoint, Brooklyn, N. Y., for the inspection and maintenance of wood and steel derricks, hoisting engines, ropes, slings and connections for the erection of structural steel work. 3000 w. Eng Rec—April 19, 1913. No. 41355.

Construction Progress
A Practical Method for Following Up
Construction Work. Valden W. Welch. Outlines an effective plan applicable to industrial construction generally. First of two articles. 1500 w. Engineering Magazine—June, 1913. No. 43096 B.

Contractors' Plants

Contractor's Plant and Construction Methods Employed in Building the New Water Supply and Storage Works at La Crosse, Wis. Illustrates and describes some of the construction methods in building wells, well houses or low-lift pumping stations, etc. 3500 w. Engng & Con—Aug. 13, 1913. No. 44344.

Contracts

The Prevention of Fraud in Guarding Public Contracts. Jerome Cochran. States essentials that must be observed if instructions to bidders are to provide for fair competition, applying the principles, and discussing details related to the sub-9000 w. Cornell Civ Engr-Nov., ject. 1912. No. 87589 C.

Deduction of Liquidated Damages for Delay. William B. King. Report of two important decisions by the U.S. Court 2500 w. Eng Rec-Dec. 14, of Claims. 1912. No. 38196.

See also Arbitration, under INDUSTRIAL ECONOMY.

Contract Work

See Motor Trucks, under MECHANICAL Engineering, Automobiles.

Cost Keeping

A Scientific Cost-Keeping System for Reinforced Concrete. John S. Nicholl. Detailed system of cost keeping as followed by the Aberthaw Construction Company. Charts. 6200 w. Engineer-ing Magazine—Jan., 1913. No. 38685 B.

Keeping Concrete Costs. Morton C. Tuttle. Explains a method of obtaining construction costs during the progress of the work. 2500 w. Eng Rec-Jan. 4, 1913. No. 38801.

Cost Keeping for Reinforced-Concrete Buildings. W. P. Anderson. Explains in minute detail for the benefit of contractors in general the field and office methods of the Ferro Concrete Company. 4500 w. Engineering Magazine—April, 1913. No. 40909 B.

Cotton Mills

I. Some of the Problems Encountered in the Design, Construction and Equipment of the Modern Cotton Mill. Frank W. Reynolds. II. Modern Methods of Lighting in Cotton Mills. Albert L. Pearson. III. Air Conditioning for Tex-tile Mills. Frank W. Parks. Three brief papers with short discussion. 4500 w. Jour Am Soc of Mech Engrs—June, 1913. No. 42961 D.

Court House

Court House Planning. Henry D. Harlan. The present number discusses the essential requirements. Ills. 4000 w. Br Build—Jan., 1913. Serial, 1st part. No. 39570 D.

CONSTRUCTION

Excavation

Crushers Crushers

No. 2 Crushing Plant of Natomas Consolidated. Richard H. Vail. Illustrated description of the largest of three rockcrushing plants in California. 4000 w. Eng & Min Jour—Sept. 13, 1913. No. 45119.

See Reinforced Concrete, under Construction.

Drainage

A Study of Variations in Run-Off Observations and Their Relation to Drainage. From a report to the Illinois Soc. of Engrs. and Survs. Shows the need of great caution in applying results observed in one locality to the solution of problems in another. 1800 w. Engng & Con—Feb. 5, 1913. No. 39697.

Some Drainage Projects in Southeastern Illinois. Charles A. Sheppard. From a paper before the Illinois Soc. of Engrs. and Survs. Discusses the drainage problem of Cahokia Creek and Wood River. 2500 w. Engng & Con-Feb. 5, 1913. No.

Yakima Indian Reservation Drainage Project. James W. Martin. An account of drainage of lands injured by over-use of water for irrigation. Ills. 4000 Eng. News—Feb. 20, 1913. No. 39974.

The Drainage of the Fens. Richard F. Grantham. Describes conditions and discusses how to provide for effectual drainage and prevent flooding of the land in times of heavy rainfall. Maps. 2500 w. Inst of Mech Engrs—July, 1913. No. 44458 N.

The Drainage of the River Ouse Basin. E. G. Crocker. Briefly describes the present drainage works and considers details of the necessary maintenance work. Map & Ills. 5500 w. Inst of Mech Engrs -July, 1913. No. 44460 N.

Land Drainage in Louisiana. Shaw. Describes the types of dredging plants, power plants for excavating ditches, and the methods of work. Ills. 3000 w. Eng News-Aug. 14, 1913. No. 44372.

Groundwater Movements. Drainage Methods and Open Channel Drainage. Louis Schmeer. A mathematical study. 4000 w. Engng & Con-Sept. 24, 1913. No. 45454.

Federal Aid to Drainage. J. R. Haswell. Brief review of the work undertaken along each line—farm drainage, tidal marsh work, flood prevention, land drainage, &c. 1800 w. Cornell Civ Engr—Oct., 1913. No. 46926 C.

Report on the Drainage of the Florida Extracts from an impor-Everglades. tant report by a board of engineers, and other information. 3500 w. Eng News-Oct. 23, 1913. No. 46160.

A Study of the Comparative Economy and Convenience of Steam Operated and Electrically Operated Pumping Plants for Drainage. Abstract of a paper read be-fore the Assn. of Drainage and Levee Districts of Illinois. An argument for the use of electric power for such plants, giving data of costs and efficiencies. 5000 w. Engng & Con—Oct. 1, 1913. No. 45624.

See Reclamation, under Construction; Drainage, under Waterways and Harbors, and Drainage, under MINING AND

METALLURGY, Mining.

Drilling

Rock Drilling at the Kensico Dam. Frank Richards. Brief description of the dam for the storage reservoir of the N. Y. City water service, especially de-scribing the electric air drills, drill wagon, drill sharpener, and giving the power cost. Ills. 2000 w. Compressed Air— March, 1913. No. 40430.

Earth Pressure

Lateral Pressure in Clay From Superimposed Loads. Walter L. Cowles. study of the horizontal effect of a vertical superimposed load. 700 w. W Soc of Engrs—Oct., 1912. No. 37740 D. **Earthquakes**

See Panama Canal, under Waterways

and Harbors. Electric Power

Utilizing Electrical Energy in the Construction of the Commonwealth Pier at South Boston, Mass. Illustrated description of the plant used. 1000 w. Elec Rev & W Elect'n—Aug. 2, 1913. No. 44139.

See also Panama Canal, under Waterways and Harbors.

Engineering Fees

A German Code of Fees. A translation of the present German code, adopted in 1901 by six technical associations for fixing fees for architectural and engineering work. 2500 w. Dec. 12, 1912. No. 38178. Eng News-

Estimates

Methods of Estimating Construction Donald B. Fegles. Suggestions Costs. for estimating the quantities for building structures with particular reference to concrete slabs. Diagrams. 2000 w. Eng Rec—Nov. 2, 1912. No. 87225.

Excavation

Economic Analysis of Excavation Methods on a Typical Section of New York State Barge Canal Work. Emile Low. Ills. 2200 w. Engng & Con—May 21, 1913. No. 42311.

See Submarine Excavation under

Excavation, under Waterways and Harbors.

Excavators

CONSTRUCTION

Fireproof

Excavators

The Use of Electrically Operated Shovels for Building Foundation Excavation in Boston. Describes method of excavating in a congested district where smoke from a contractor's plant would be objectionable. Ills. 1000 w. Engng & Con—Jan. 22, 1913. No. 39326.

Performance and Power Consumption of a 2½ Cu. Yd. Electric Shovel. C. E. Hogle. Information concerning a shovel used in constructing a dam in Nevada, its operation and tests. 1000 w. Eng News—Jan. 23, 1913. No. 39374.

A Clamshell Bucket With Electric Mo-

A Clamshell Bucket With Electric Motor Opening and Closing Attachment. Illustrated description. 1200 w. Engng & Con—July 16, 1913. No. 43817.

Exhibitions

The International Architectural Exhibition in Leipzig, 1913 (Die Internationale Baufach-Ausstellung mit Sonderausstellungen in Leipzig, 1913). J. Kollmann. Details of the exhibition to be opened in May. Ills. 8200 w. Zeit des Ver deutscher Ing—Feb. 15, 1913. No. 40538 D.

Factories

A Recent Type of Factory Construction. Describes a structure at Granite City, Ill. Molded concrete columns, girders, wall and roof slabs and sawtooth frames assembled at the site. 1000 w. Ir Age—Nov. 7. 1912. No. 37749 C.

Ir Age—Nov. 7, 1912. No. 37749 C.
Allowable Heights and Areas of Factory Buildings. Ira H. Woolson. Shows the danger of excessive heights, and gives a summary of the opinions of many fire chiefs. 2000 w. Jour Am Soc of Mech Engrs.—June, 1913. No. 42954 D.

The Construction and Equipment of Cotton Mills. A symposium on design, construction, lighting, heating and humidification. 3500 w. Ind Engng—July, 1913. No. 43461 C. Factory Building with Reinforced Con-

Factory Building with Reinforced Concrete Interior Construction. Illustrated description of a modern factory in Montreal. 1500 w. Engr, Lond—Aug. 29, 1913. No. 45044 A.

The Layout, Design and Equipment of Industrial Works. A. Home Morton. Detailed discussion of problems related to factories. 4500 w. Con Rec—Sept. 24, 1913. No. 45450.

See also Reinforced Concrete, under Construction.

Factory Buildings

The Fundamentals of Factory Design. George Service. Showing how the efficiency is dependent largely upon the layout and equipment. Ills. 2200 w. Con Rec—April 30, 1913. No. 42077.

The Design and Architectural Treat-

ment of the Shop. 4H. V. Lanchester. A critical discussion of fletails. General discussion. Ills. 7500 w. Jour Soc of Arts—April 25, 1918. No. 41911 A.

See also Reinforced Concrete, under Construction.

Failures

Collapse of Building in Kansas City. Robert S. Beard. Illustrated account of a wreck caused by failure of reinforced concrete and tile roof. 3500 w. Eng Rec.—Nov. 2, 1912. No. 37227.

Historic Failures of Engineering Structures. Horace R. Thayer. Discusses the general causes of failure, giving brief descriptions of many disasters. Ills Discussion. 15500 w. Pro Engra' Soc of W Penn—June, 1913. No. 43762 D.

Fire Extinguishing

Extinguishing Fires with Sawdust. Edwin A. Barrier. Information concerning experiments for extinguishing fires in burning lacquer by means of sawdust, and the satisfactory results. 1500 w. Eng News—Jan 30, 1913. No. 39593.

Fire Houses

Gotham Building 45 Fire Houses Illustrates and describes new buildings for New York, all to be equipped with motor-propelled fire-fighting apparatus. 5000 w. Automobile—Dec. 5, 1912. No. 38083.

Fire Prevention

Fire Hazard and Fire Prevention in Foundries. Gives interesting results of an investigation made by New England foundrymen. 2500 w. Foundry—Feb., 1913. No. 39651.

Fireproof Building

Reminiscences of the Early Days of Fireproof Building Construction in New York City. M. A. Brooks. Notes on the Equitable Building, recently razed and the construction methods revealed. Ills. 1800 w. Eng News—Nov. 28, 1912. No. 37936.

Tests of Fireproof Construction for the City of New York. Harold Perrine. Describes the methods of conducting these tests apon full-size construction and upon samples. Ills. 2500 w. Sch of Mines Qr—April, 1913. No. 41697D.

samples. Ills. 2500 w. Sch of Mines Qr—April, 1913. No. 41697D.

The Fireproof Building; Its Advantages and Its Weaknesses. H. W. Forster. Discusses the many storied type of the office, or warehouse, or factory, containing combustible material. General discussion. 7000 w. Pro Engr Soc of W Penn—April, 1913. No. 42328 D.

Testing Room for Automobile Engines. Harry C. Spillman. Brief illustrated description of the fireproof test room of the Continental Motor Mfg. Co., Detroit,

Fire Protection

CONSTRUCTION

Floors

1500 w. Ir Age-May 1, 1913. No. 41797 C.

Fireproof Building Construction. M. Cook. Discusses reinforced concrete construction and fireproof steel. Also the different materials for construction and protection. 6000 w. Ap Sci- May, 1913. No. 42915 C.

Is It Ignorance or Criminal Indifference? Sidney Graves Koon. Reviews a number of disastrous fires in large cities showing that by using wire glass, automatic sprinklers and available fire protection the fires could have been quickly extinguished. 2500 w. Sib Jour of Engng Oct., 1913. No. 46293 C.

See also Concrete and Factories, under Construction.

Fire Protection

The Life Hazard in Crowded Buildings Due to Inadequate Exits. H. F. J. Porter. Shows the impossibility of supplying sufficient stairways for loft buildings and suggests fire walls bisecting the buildings from cellar to roof. 3500 w. Jour Am Soc of Mech Engrs-May, 1913. No. 42407 D.

Debarment of City Conflagrations. Albert Blauvelt. Considers the things which cannot debar city conflagrations, and deduces the things which can combine for debarment, discussing the advantages and disadvantages of each. 4000 w. Jour Am Soc of Mech Engrs-June, 1913. No. 42953 D.

Fire Protection of the Country House. Edwin O. Torbohm. Suggestions for means of quickly extinguishing a fire while still small, and for safeguarding danger points in a house. 3500 w. Archt

& Bldg—June, 1913. No. 42962 C. Fire Protection for Factory Workers. Discusses why lives are lost in factory fires, and how such loss can be avoided. Ills. 5000 w. Ind Engng-Oct, 1913. No. 45878 C.

See also Fire Protection, under ME-CHANICAL ENGINEERING, Machine Works and Foundries; Belts, under MECHANICAL ENGINEERING, Power and Transmission, and Fire Protection, under MINING AND METALLURGY, Mining.

Floors

Stress Measurements in a Cantilever, Flat-Slab, Reinforced Concrete Floor. From a paper by Arthur R. Lord, read before the Nat. Assn. of Cement Users. Describes a test made in Chicago, the methods employed and results. Ills. 2500 w. Eng Rec—Dec. 28, 1912. No. 38573. Wearproof, Dustproof, and Waterproof Warehouse Flooring. S. W. Flesheim.

Read before the Eastern Ice Assn. Brief-

ly considers wood floors, brick, composition, and concrete floors, favoring the 2000 w. Ice & Refrig-Dec., 1912. No. 38045 C.

Investigation of a Compound for Producing Dustless Concrete Floors. Albert C. Arend. Describes tests made, results, and states conclusions. 1800 w. Eng News—Dec. 12, 1912. No. 38180. Statical Limitations Upon the Steel

Requirements in Reinforced Concrete Flat-Slab Floors. John R. Nichols, Jr. Aims to inquire into the limiting stresses and to establish their values for comparison with those obtained by current methods of designing floors. 1800 w. Pro Am Soc of Civ Engrs — April, 1913. No. 41644 F.

Statical Limitations Upon the Steel Requirement in Reinforced-Concrete Flat Slab Floors. Discussion of the paper of John R. Nichols, Jr. 12000 w. Pro Am Soc of Civ Engrs—Aug., 1913. No. 44787 F.

Molding Sand Cores for Floor Construction. Frederick Squires. Illustrated description of the use of sand panels for floor centering. 2000 w. Concrete-Cement Age—May, 1913. No. 42015.

The Construction and Finishing of Floor Slabs. C. A. P. Turner. Calls attention to the properties and characteristics of reinforced concrete that must be understood by constructors to avoid disaster. 2000 w. Con Rec—April 30, 1913. No. 42075.

The Treatment and Care of Floors. George W. Saums. Short paper discussing the need of preservation from dampness, splintering, etc. 1200 w. Am Wood Pres Assn—Jan., 1913. No. 43270

The Flat-Slab System in Floor Construction. W. G. Ure. Describes advances during the past decade in reinforced concrete floors. Ills. 3500 w. Can Engr—June 12, 1913. No. 42858.

Methods of Designing the Flat Slab System. W. G. Ure. Discusses the fundamental principles upon which some of the methods are based with a comparison of results. Ills. 3300 w. Can Engr—June 19, 1913. No. 42992.

Field Made Plaster Cores for Floor

Frederick Squires. Illustrated description of the construction and use of the "pyroblock." 2500 w. Concrete-Cement-Age—June, 1913. No. 42809.

Two-Way Reinforced-Concrete and Tile Floor. Charles V. Wein. Illustrates and describes a system used extensively in Canada and abroad. 1200 w. Concrete-Cement Age-July, 1913. No. 43734.

Composition Flooring. H. M. Hooker. A personal study of composition flooring, its history, description, characteristics, construction, etc. 1800 w. Pro Engrs' Soc of W Penn—July, 1913. No. 44516 D.

Creosoted Wood Blocks for Factory and Warehouse Floors. F. A. Weaver. Describes the proper construction and states the advantages claimed. 1500 w. Eng Rec—Aug. 16, 1913. No. 44430.

A Fire, Load and Water Test upon Cinder-Concrete, Terra-Cotta, and Gypsum Floor Arches. Harold Perrine. Report on a test made for Albert-Oliver at the Columbia Fire Testing Station. Ills. 1500 w. Eng News—Aug. 21, 1913. No. 44576.

Fire, Load and Water Test of Floor Arches. Brief illustrated account of an interesting test in which the qualities of gypsum, terra cotta tile, and reinforced concrete were tested. 600 w. Sci Am—Aug. 9, 1913. No. 44216.

Hollow-Columned Floors of Reinforced Concrete in the United States (Balklooze vloeren van gewapend beton in de Vereenigde Staten van Noord-Amerika). J. K. Tromp. Describes system of reinforcing floors supported by Hollow columns. Ills. 4500 w. De Ingenieur—Sept. 13, 1913. No. 46097 D.

See also Reinforced Concrete Slabs, under Materials of Construction, and Floor Tests, under Measurement.

Foundation Plates

Foundation Plates for Simple Loading with Particular Reference to Circular Plates (Ueber Fundamentplatten für Einzellasten unter besonderer Berücksichtigung der Kreisplatte). Dr. Lewe. A study of stresses in ribbed plates, square, octagonal, circular, etc. Ills. 2600 w. Beton u Eisen — May 26, 1913. No. 43021 E.

See also Foundations, under Bridges.

Foundations

The Hard Pan Test at the New Cook County Hospital. Frank A. Randall. Record of a hard pan test made in Chicago in connection with caisson foundation work. Ills. Discussion. 6500 w. Jour W Soc of Engrs—Oct., 1912. No. 37739 D.

Concrete Pile Footings for the 42-Story L. C. Smith Building, Seattle, Wash. Describes conditions that made necessary the foundations constructed. Ills. 1800 w. Eng News—Nov. 14, 1912. No. 37593.

A Novel Type of Cantilever Foundation Brief illustrated description of concrete cantilever footings of a 12-story loft building in New York City. 500 w. Eng News—Nov. 28, 1912. No. 37938.

Method of Building Foundations for a Typical Substation, with Special Reference to the Excavation. Alden W. Welch. Detailed description of a very deep excavation dug by using a steam shovel, and of other construction work in this connection. 700 w. Engng & Con—Jan. 15, 1913. No. 39183.

Proportioning of Foundations for Columns and Walls. Ernest McCullough. Explains method used by the writer, illustrating by examples. 1500 w. Eng News—March 6, 1913. No. 40354.

Foundations of the Northwestern Mu-

Foundations of the Northwestern Mutual Life Building. Illustrates and describes methods used at Milwaukee, Wis., in constructing massive concrete and pile footings in sheeted trenches in very cold weather. 1500 w. Eng Rec—March 1, 1913. No. 40263.

The Construction of Foundations for a Large Boiler House. Alden W. Welch. Describes a contract covering the excavation for and building of the foundations for the boiler house of a power station. 1800 w. Engng & Con—April 16, 1913. No. 41276.

Methods Used for Underpinning Adjacent Buildings and for Constructing the Pneumatic Caisson Foundations of the 50 Broad Street Building, New York City. F. E. Cudworth. Describes methods used in foundations for a 20-story office building. Ills. 2000 w. Engng & Con—Aug. 27, 1913. No. 44777.

office building. Ills. 2000 w. Engng & Con—Aug. 27, 1913. No. 44777.

The Statical Calculation of Reinforced Concrete Foundation Beds (Ueber die statische Berechnung von Eisenbetonfundamentplatten). H. Hövermann. A method for determining loads at any point of the structure in the preparation of foundations. Ills. 3000 w. Beton u Eisen—Aug. 6, 1913. No. 44638 E.

Special Concrete Foundations in the

Special Concrete Foundations in the Manila Port District. John W. Graham. From the "Qr. Bul.," Bureau of Pub. Works, Manila. Describes this section of reclaimed land and the specially designed concrete-floor construction. Ills. 1400 w. Eng News—Sept. 18, 1913. No. 45223.

Design of Footings in Reinforced Concrete. A. N. Worthington. Explains a method recently employed in numerous buildings with unvarying success. Ills. 1000 w. Can Engr—Oct. 9, 1913. No. 45788.

Shallow Foundations on Muddy and Swampy Land and Reconstruction by the Aid of Such Treatment (Flachgründungen auf Schlamm-und Moorboden und Rekonstruktionen mit Hilfe dieses Verfahrens). Mich. Heimbach. Plans and de-

Piles

tails of large bearing foundations in such instances. Serial, 1st part. 2700 w. Beton u Eisen—Oct. 2, 1913. No. 46030 E. See also Caissons, under Construction.

Framework

Girders in the Grand Central Terminal, New York City. Drawings and description of massive sections and field connections of large members in the lofty irregular framework designed for heavy

wind and static stresses. 1500 w. Eng Rec—Jan. 18, 1913. No. 39192. "Framed Supports" According to the New Austrian Regulations (Die "rahme-nertigen Tracements" and designed to the nartigen Tragmerke" nach der neuen ministerialvorschrift). österreichischen

Karl Valek. An interpretation of the regulation. Diagrams. Serial, 1st part. 3900 w. Beton u Eisen—Jan. 3, 1913. No. 40029 E.

Some Notes on the Calculation of Rectangularly Compounded Framework by the Use of Clapeyron's Equations (Einiges über die Berechnung von aus Rechtzusammengesetzen Fachwerken ecken mit Hilfe der Clapeyronschen Gleichung-en.) Ph. Leip. Mathmeatical discusen.) Ph. Leip. Mathmeatical discussion on the building up of columns, beams, struts, etc. Diagrams. 5000 w. Beton u Eisen-Aug. 25, 1913. 46027 E.

Gas Holders

Roof Construction for the New Gas-holder in Berlin-Tegel (Die Dachkonstruktion über dem neuen Gasbehälter in Berlin-Tegel). A. Mecklenbeck. Details of circular girder roof construction. Ills. Serial. 1st part. 2800 w. Zeitschr des Ver deutscher Ing—Nov. 9, 1912. 38446 D

Failure of a Spiral-Guided Gas-Holder in Steel Tank at Ilkeston. Illustrated detailed description of the holder and its failure as described by eye-witnesses, with explanation of the accident and discussion of related subjects. Plate. 6500 w. Engng—May 2, 1913. Serial. part. No. 42004 A.

Gasholders: Their Construction and Abstract of a lecture delivered by Ernst Körting before the German Gas & Water Assn. Gives a representative series showing the development of holders with comparison. Ills. 2000 w. Am Gas Lgt Jour—Aug. 18, 1913. No. 44434.

Grading Kassabick, or Land Levelling Scoop. Illustrated description of an invention especially useful in irrigation work. 1200 Engr, Lond—Nov. 22, 1912.

38037 A. Method and Cost of Leveling Dredged with Electrically-Driven Over Ground James C. Bennett. De-Drag Scraper

scribes the equipment used giving statement of costs. 1500 w. Engng & Con— Dec. 4, 1912. No. 38048.

Grain Elevators

See also Concrete, under Construction. Granaries

Enlargement of the Königsberg Granary (Die Erweiterungsbauten des Getreidespeichers in Königsberg). M. Buhle. Details of construction adopted for a 20,-000-ton addition. Ills. 2600 w. Zeitschr des Ver deutscher Ing—Jan. 11, 1913. No. 40038 D.

Grandstand

Grandstand for the Brooklyn Baseball Club. Drawings and description of a large two-story street pavilion, with cantilever trusses supporting concrete floors and two office stories over the entrance rotunda. 1600 w. Eng Rec-March 8, 1913. No. 40373.

Hospitals

New General Hospital, Toronto. Illustrates and describes interesting construction features. 4000 w. Con Rec-July 23, 1913. No. 43871.

Labor

Construction by Day Labor in Indianapolis. W. N. Jones. Illustrates and describes the methods and costs of constructing concrete vaulting over the city reservoir. 2500 w. Eng Rec—April 19, 1913. No. 41353.

Methods

Business Methods in Construction Work. James L. Stuart. methods used, illustrating by examples. General discussion. 5500 w. Jour Cleveland Engng Soc-Sept., 1913. 45428 D.

Mill Buildings

A Modern Steel Mill Building. Arthur W. Harrington. Illustrated description of a structure recently erected in Water-'own, N. Y., of steel frame and concrete walls. 1000 w. Cornell Civ Engr.—Jan., walls. 1913. No. 39393 C.

Partitions

Partitions for Factories and Industrial Buildings. Henry Grattan Tyrrell. This first instalment of a serial is devoted to cement, plaster, and terra-cotta systems. Ills. 3500 w. Engineering Magazine— Sept., 1913. No. 44768 B. Partitions for Factories and Industrial

Buildings. Henry Grattan Tyrrell. This second and concluding article of a serial considers framed partitions of metal and wood. Ills. 3000 w. Engineering Magazine-Oct., 1913. No. 45543 B.

See Reinforced Concrete, under Materials of Construction.

Reclamation

The Making and Driving of Reinforced-Concrete Piles. Gower Bouverie Raynor Pimm. Deals with the construction of Ferrycarrig Bridge, Co. Wexford. Ills. 1500 w. Inst of Civ Engrs—No. 4017. No. 39294 N.

Large Concrete Pile Installation. Gives data on preliminary bearing tests and details of driving more than 11,000 cast-inplace piles for steel plant foundations. Ills. 2000 w. Eng Rec—Jan. 11, 1913. No. 38953.

Reinforced Concrete Sheet Piling (Damplanken van gewapend beton). W. Lammers. Details of reinforcing systems available for keyed piling, and methods for driving. Ills. 1500 w. De Ingenieur—Dec. 14, 1912. No. 39059 D.

Some Experiences with Concrete Piles in Chicago. J. Norman Jensen. Gives experiences with three different forms of concrete pile. Ills. 2500 w. Eng News—Feb. 27, 1913. No. 40238.

Modern Systems of Steel Sheet Piling. Illustrates and describes the Ransome interlocking steel piling and its applications for cofferdams and allied constructions. 1500 w. Archt, Lond—July 4, 1913. Serial, 1st part. No. 43702 A. Resistance of Piling (Résistance des

Resistance of Piling (Résistance des Pieux. J. Bénabeng. A study of inclined piling, vertical piling, anchorage etc. Ills. 8000 w. Ann de Ponts et Chaussées—May-June, 1913. No. 43561 E. + F.

Concrete Socket Piling. K. D. Mac-Lean. Describes pier substructure construction, especially the concrete piles, giving tests. Ills. 2200 w. W Engng— Aug., 1913. No. 44388 C.

See Foundations, under Construction.

Post-Office

New U. S. Post-Office Building for New York. Illustrated description of the new building on 8th Ave., 31st to 33d St., and its machinery for handling the mails. 1000 w. Archt & Bldg—April, 1913. No. 42321 C.

Rams

Compressed-Air Hand Pavement Rams (Druckluft-Handpflasterrammen). M. Kiecksee. Details of a new pneumatic ram ranging in size from that used in setting mosaic floors to street pavements. Ills. 1300 w. Zeit des Ver deutscher Ing—June 28, 1913. No. 43534 D.

Razing

Methods and General Costs of Taking Down a 175-foot Steel Stack and Removing a Bucket Coal Conveyor. Alden W. Welch. Detailed discussion of the work. 1800 w. Engng & Con—Dec. 4, 1912. No. 38052. Reclamation

Reclaiming a Large Tract by River Protection Work at Kansas City. N. M. Fitch. Map and description of work in Clay Co., Mo., employing several types of leves and dike construction, including mattress revetment work. 2500 w. Eng Rec—Dec. 28, 1912. No. 38575.

Municipal Reclamation of Waste Lands. Burt A. Heinly. An account of the planting of trees on arid plains at Los Angeles, to be sold, when grown, for fence posts and telegraph poles. Ills. 1500 w. Munic Jour—Dec. 19, 1912. No. 38318.

The Problem of Interstate Swamp Drainage: The St. Francis Basin. M. O. Leighton. Outlines the physical conditions of this basin lying in S.-E. Missouri and N.-E. Arkansas on the west bank of the Mississippi River, and the problems connected with its improvement. Ills. & Map. 3000 w. Engng & Con—Dec. 11, 1912. No 38148

The Problem of Interstate Swamp Drainage; The Red River of the North. M. O. Leighton. Map with description of the valley showing the drainage requirements, and proving that the Red River will be overtaxed under future conditions of intensive drainage. 5000 w. Engng & Con—Jan. 1, 1913. No. 38774.

The Problem of Interstate Swamp Drainage. The Dismal Swamp. M. O. Leighton. The origin of this swamp and the engineering features of its drainage are explained. Map. 1800 w. Engng & Con—March 12, 1913. No. 40455.

The National Aspect of the Reclamation of Swamp and Overflowed Lands. Edmund T. Perkins. Argues for a general plan covering the entire drainage basin, under the control of the Federal government. Discussion. 6800 w. Jour W Soc of Engrs—Feb., 1913. No. 40408 D.

The Work of the United States Reclamation Service. D. P. Dale. Explains the object of the service, the plan of the work, special features, and the present status. 2500 w. Wis Engr—Feb., 1913. No. 41265 C.

The Drainage of Egypt. Hanbury Brown. A reply to Sir William Will-cocks' lecture in Cairo, which was a criticism of the drainage scheme of lower Egypt; also criticises past policy. 3000 w. Engr, Lond—March 21, 1913. Serial. 1st part. No. 41020 A.

Reclaiming Dredged Lands in California. A. H. Martin. An illustrated report of results with various crops. 1500 w. Min & Engng Wld—June 7, 1913.

No. 42723.

Reinforced Concrete

CONSTRUCTION

Reinforced Concrete

Prize Design for Coney Island Beach Reclamation. First prize. Plan of George E. Jackson, with description. 1200 w. Eng News—Aug. 14, 1918. No.

Coast Sand Dunes, Sand Spits and Sand Wastes. Gerald O. Case. The first of a series of articles dealing with their reclamation. Ills. 6000 w. Surveyor—Sept. 5, 1913. Serial, 1st part. No. 45146 A.

The National Drainage Congress Bill for Government Reclamation of Swamp Lands. A bill to establish a drainage fund. 3500 w. Engng & Con-Oct. 1, 1913. No. 45625.

Sutter Basin Reclamation Project. Information from reports by George N. Randle and by Edward F. Haas, concerning this California project. Ills. 3000 w. W Engng—Oct., 1913. No. 46358 C. See also Drainage, under Construction.

Reinforced Concrete

Notes on the Theory of the Required Forms in the Construction of Reinforced Concrete Ribbed Domes (Beitrag zur Theorie der im Eisenbetonbau gebräuchlichen Form der Rippenkuppel). K. W. Mautner. Derivation of formulae for domes and arches. Ills. 5600 w. Beton u Eisen—Oct. 2, 1912. No. 37425 E.

The Reinforced Concrete Dome at Saint Blasius (Die Eisenbetonkuppel im Sanct Blasien). A. Kleinlogel. Details in the construction of a dome of 50-foot span for the catholic cathedral. Ills. 3200 w.

Beton u Eisen—Oct. 2, 1912. No. 37424 E.
The Municipal Gas Plant of Helsingfors, Finland (Das städtisches Gaswerk in Helsingfors, Finnland). J. Castrén. Describes construction, and gives formulae for snow loads, wind bracing, etc. Ills. 2400 w. Beton u Eisen. Oct. 2, No. 37426 E.

Failure of a Reinforced Concrete Theatre in Course of Construction, Cincinnati, Ohio. Clifford M. Stegner. Illustrated account of the failure and its cause. 1500 w. Eng News—Dec. 26, 1912. No. 38597

Formulas and Diagrams for the Design of Rigid Frames for Steel and Reinforced Concrete. Sanford E. Thompson and Edward Smulaki. Read before the Nat. Assn. of Cement Users. Gives formulae and diagrams for simplifying the design. 3000 w. Engng & Con—Jan. 15, 1913. No. 39184.

The Practical Side of Reinforced-Concrete Construction. E. D. Wells. Pres. address before the Concrete Inst., London. From Concrete & Constructional Engr., Discusses cement, aggregates, mixing, testing, etc. 6000 w. Cement-

Oct., 1912. No. 39315 C. Reinforced Concrete Undertakings in the Province of Ravenna (Nota sui lavori in cemento armato in provincia di Ra-venna). M. Perilli. Review of some construction work now in progress involving the use of reinforced concrete. Ills. Serial. 1st part. 2800 w. Il Cemento-Dec. 30. 1912. Uo. 39093 D.

Construction of an Eight-Story Shop-uilding. John N. McMichaels. Illus-Building. trates and describes the structural features of a building in Detroit. 1500 w. Conc.-Cem. Age-Feb., 1913. No. 39892.

Reinforced Concrete for Railway Sheds. Gives a comparison of cost between the ordinary style of shed used and one built of reinforced concrete. Ills. 1500 w. Engr, Lond-Jan. 31, 1913. No. 39816 A.

Reinforced Concrete Bicycle Track in Zürich (Radrennbahn aus Eisenboton in Zürich). Jaro Polirka. Details of construction of oval track highly inclined at curves. Ills. 5600 w. Beton u Eisen—Jan. 3, 1913. No. 40028 E.

Calculations on Reinforced Concrete Walls (Calcul des Hourdis en Beton Armé). Notes added to the report of the Consul General of Bridges and Highways, relating to bridge piers and retaining walls. 24000 w. Ann d Ponts et Chaussées—Nov., 1912. No. 40073 E + F.

Industrial Plant with All Structures Built of Reinforced Concrete. W. J. Knight. Illustrated description of buildings, including a large machine shop with sawtooth construction. 3500 w. Rec-March 8, 1913. No. 40366.

Method of Constructing an Eight-Story Reinforced Concrete Warehouse, Using Special Column Forms and Concreting Plant. Illustrated description of a structure in Chicago for the Larkin Co. 1500 Engng & Con-Feb. 26, 1913. No. 40231.

Reinforced-Concrete Coal Trestle at Gilbertville, Mass. Illustrated description of the design and construction. 800 w. Eng Rec-March 15, 1913. No. 40648.

Reinforced Concrete Construction in the New Munich Customs House (Die Eisenbetonkonstruktionen des Hauptzollamtsneubaues in München). Herr Kaiser. Illustrated description. 2000 w. Beton u Eisen—Feb. 13, 1913. No. 40523 E.

Reinforced Concrete Studies. J. K. Finch and W. F. Thoman. First of a series of articles discussing the design and method of construction of structures in reinforced concrete. The hollow dam of the buttress type is discussed. Ills. 5000 w. Sch of Mines Qr-April, 1913. No. 41695 D.

The Unit Method of Reinforced Concrete Construction. John E. Conzelman. Briefly considers the general subject of unit construction and its advantages, and the work done under unit methods, giving report of tests. General discussion. Ills. 5000 w. Jour Assn of Engng Soc-April, 1913. No. 41286 C.

Reinforced Concrete. Percy J. Waldram. Extracts from a paper read before the Surveyors' Inst. A discussion of its uses and limitations. 4000 w. Sur-

veyor—April 11, 1913. No. 41383 A.
A Reinforced-Concrete Beacon Tower, Alexandria, Egypt. Illustrated detailed description of the structure and its construction. 1500 w. 10, 1913. No. 41166. Eng News-April

Tests of Reinforced Concrete Buildings Under Load. Arthur N. Talbot and Willis A. Slater. Records the results of three field tests made on reinforced concrete floor systems, describing the method of testing. Ills. 104 pp. Bul Univ of Ill, No. 64—Jan. 13, 1913. No. 42480 N.

A Large Reinforced Concrete Factory at Berlin, Ontario. H. F. H. Hertzberg. Illustrated description. 2500 w. Con Rec -April 30, 1913. No. 42076.

Reinforced Concrete in Theatres. Gives interesting examples of both European and American practice. Ills. 1600 Con Rec—April 30, 1913. No. 42074. 1600 w.

Reinforced Concrete in Conjunction with Masonry (Eisenbeton in Verbindung mit Mauerwerk). A. Kleinlogel. Suggestions for effecting a durable bond in such construction. Ills. 2600 w. Beton u Eisen—April 21, 1913. No. 42127 E.

Doubly Reinforced Concrete Sections (Doppelt armierte Eisenbeton-Querschnitte). Otto Leuprecht. A study of reaction against stress under eccentric loads and straight bends. Diagrams. 2500 w. Schweiz Bau—June 7, 1913. No. 43024 D.

Reinforced-Concrete Factory Buildings. Harry C. Spillman. A statement of their advantages. Ills. 1500 w. Ind Engng-

July, 1913. No. 43458 C.

Reinforced-Concrete in Factory Construction. Illustrates and describes details of mill and dam work at Milton, 2000 w. Concrete-Cement Age -July, 1913. No. 43731.

Reinforced-Concrete Wall Footings and Column Footings. Arthur N. Talbot. Describes tests of 114 wall footings and 83 column footings. Ills. 114 pp. Bul Univ of Ill, No. 67—March 31, 1913.

No. 43616 N.

The Application of Reinforced Concrete. G. B. R. Pimm. Considers some of the more general applications. Discussion. 2200 w. Surveyor-July 25,

1913. Serial, 1st part. No. 44178 A.
The Application of Unit-Methods to Reinforced Concrete Building Construc-tion. Charles D. Watson. Illustrated description of unit built structures, explaining their advantages. Discussion.

10500 w. Jour Cleveland Engng Soc— Sept., 1913. No. 45429 D.

Reinforced Concrete Coal and Ash Bunker for the Seelbach Hotel, Louisville, Ky. G. D. Crain, Jr. Drawings and description. 1500 w. En Sept. 24, 1913. No. 45453. Engng & Con-

See also Abutments and Reinforced Concrete, under Bridges; Buildings, Roofs, Floors, Retaining Walls and Theatres, under Construction; Reinforced-Concrete Columns, Beams, and Reinforced-Concrete, under Materials of Construction; Stresses, under Measurement; Reinforced-Concrete, under Roads and Pavements; Canal Lining Dams, Reservoirs, under Water Supply, and Shore Protection, under Waterways and Harbors.

Retaining Walls Design of Retaining Walls. Alfred W. Hoffmann. Reviews the theory, construction and economy of such structures, the need of studying the conditions in each case. Discusses the most modern types of reinforced-concrete retaining walls. Ills. 5000 w. Ry Engng & Main of Way -March, 1912. Serial, 1st part. 40792.

Reinforced Concrete. Albert J. Hines. trates and describes a wall of unusual design, constructed on the Nickel Plate in East Cleveland. 600 w. Cornell Civ East Cleveland. 600 w. Cornell Civ Engr—March, 1913. No. 40875 C. Design of Standard Reinforced-Con-

crete Retaining Walls. H. M. Gibb. Gives a quick, accurate and simple method to apply to all common types, which gives results within about 10% of the rigid analysis. Ills. 1200 w. Eng News—July 24, 1913. No. 43882.

Rock Slides

A Suggested Method of Preventing Rock Slides. George S. Rice. Describes a proposed scheme of constructing under ground retaining walls and discusses the question of its application at Culebra, Cut. Discussion. Ills. 15000 w. Jour W Soc of Engrs—Sept., 1913. No. 46286 D.

See Dam Design, under Water Supply, and Paris, under Waterways and Harbors.

Roofs

Concourse Roof, Grand Central Terminal, New York City. Brief description and drawings of the framing of lofty five-centered arch roof truss and suspended ceiling. 1500 w. Eng Rec—Feb. 22, 1913. No. 40103.

Steelwork Design

Suspended Roofs of Reinforced Concrete (Die freitragenden Dächer Eisenbeton). L. Geusen. Formulæ for calculating wind pressures, distributed loads, in this first of two articles. Diagrams. Serial. 1st part. 4500 w. Beton u Eisen—April 1, 1913. No. 41432 E.
The Calculation of Arched Roofs (Die

Berechnung Bogendecken). der Domke. Formulae for the determination with reinforced concrete of stresses structures. Diagrams. 5600 w. Beton u

Eisen—Aug. 6, 1913. No. 44639 E.
Stress Coefficients for Roof Trusses.
Carl E. Schirmer. Gives data on the design of roof trusses arranged in convenient form for the designer. Supplement. 1200 w. Mach, N Y—Sept., 1913. No. 44841 C.

See also Concrete Roofs, under Construction.

Sanitation

Camp Hill View Sanitation, Catskill Aqueduct. Arthur W. Tidd. General description of the camp and account of the sanitary provisions. Ills. 6000 w. Eng News-Oct. 16, 1913. No. 45933.

American School Houses (Amerikanische Volksschulhäuser. Karl träger. Brief descriptions of some typical American schools in the larger cities, and their designing architects. Ills. 3000 w. their designing architects. Ills. 3000 w. Zeit des Oest Ing u Arch Ver—Jan. 31, 1913. No. 40548 D.

Shed Design

An Economical Design for a Timber Cotton Shed. E. S. Pennebaker, Jr. Description of a shed recently erected on the docks at Mobile, Ala., to provide storage for cotton. Discussion. Ills. 5500 w. Jour W Soc of Engrs—Feb., 1913. No. 40411 D.

Skyscrapers

Why the Giant Skyscrapers Are Safe. J. F. Springer. Illustrates and describes methods of foundations construction for high buildings. 2500 w. Cassier's—June, 1913. No. 42866 B.

Specifications

Specifications. O. S. Beyer, Jr. Deals with the importance and value of good specifications, the field in which they may be employed, and related subjects. Gen-eral discussion. 5500 w. Pro W Ry Clul--Dec. 17, 1912. No. 39334 C.

Stacks

Calculations for Stability of Chimneys. Leonard Goodday. Detailed explanation of method used in calculating a chimney for an engine house. 1200 w. Can Engr
—Jan. 16, 1913. No. 89382.

Segmental Chimney Construction in France. Explains the advantages of reinforced concrete for chimney construction and illustrates applications and structures erected. 2500 w. Concrete-Cement Age Jan., 1913. No. 39218.

Baldwin on Chimneys with New Charts for Use in Connection with House Heating and Power Plants. Discusses chimney design, how to determine the limit of a chimney and related subjects. Ills. 3000 w. Heat & Vent Mag-Oct, 1913. No. 46299.

W. H. Grantham. Chimneys. cusses conditions to be considered in deciding upon the type of chimney in the present article. 1700 w. Mech Wld— Sept. 19, 1913. Serial, 1st part. No. 45564 A.

See same heading, under MECHANICAL Engineering. Steam Engineering.

Stairway Collapse

Failure of a Stairway to Elevated Railway Station, Brooklyn, N. Y. An account of the failure at the Nostrand Ave. station of the Atlantic Ave. line, on Dec. 19. Ills. 1200 w. Eng News—Dec. 26, 1912. No. 38598.

Steam Shovels

Some Records of Steam Shovel Ditch Excavation. Operations and Costs on the Los Angeles Aqueduct. D. W. Peterson, in Western Engag. Gives steam shovel cost data and operating records. 3500 w. Engng & Con—Feb. 26, 1913. No. 40229.

Steel Frame

Steel Framework of St. Jean Baptiste Church. Illustrates and describes details of a Roman Catholic church in New York, having a large double dome supported on columns and roof trusses, and two towers with circular framework and conical roofs. 2000 w. Eng Rec—Oct. 18, 1913. No. 45941.
Steel Towers

Steel Towers for Wood Designing complete analysis of the Ā stresses in the tower structure. Ills. 5000 w. Mach, N Y-Jan., 1913. Serial. 1st part. No. 38720 C.

Analysis of Steel Towers. Isidore Delson. Explains the determination of action of wind, loads and design of tower bents. Line drawings. 2200 w. Eng bents. Line drawings. 2200 Rec—Sept. 13, 1913. No. 45111.

Modern Steel Building Construction. Frank N. Jackson, and Bernard Dicksee. Describes the preparation of the designs and drawings, and the rules governing the design of steel-frame buildings in England. 12500 w. Jour Roy Inst of British Archts—April 26, 1913. No. 42793 N.

Steelwork Design Design of the Steelwork and Methods and Cost of Its Erection for an Armory Having Long-Span Three-Hinged Arches.

CONSTRUCTION

Tunnels

Deals with the armory being erected for the University of Illinois. Ills. 2000 w. Engng & Con—Ang. 6, 1913. No. 44212.

Stone Crushers

The World's Largest Stone Crushing Plant. Illustrated description of the electrically-driven rock-crushing plant at Calcite, Mich. 2500 w. Elec Rev & W Elect'n—April 26, 1913. No. 41654.

Stucco

Preventing Settlement Cracks in Stucco Houses. Ernest McCullough. Explains how to minimize effects of settlement and shrinkage. Ills. 2000 w. Cement & Eng News—May, 1913. No. 42205.

Swimming Bath

Southampton's Open-Air Swimming Bath. J. A. Crowther. Illustrated description of the construction of a ferroconcrete bath in tidal waters. 1200 w. Surveyor—Feb. 28, 1913. No. 40474 A.

Test Building

Details of an Engine Test Building. Illustrated description of general features and of door, window, heating duct, drain and floor construction of a building in Laporte, Ind. 1500 w. Eng Rec—Jan. 11, 1913. No. 38956.

Theatres

The New Belleville Theatre in Paris (Le nouveau théatre de Belleville à Paris). Details of large reinforced concrete theatre with 1500 seats. Ills. 2000 w. Genie Civil — March 8, 1913. No. 40599 D.

The Champs-Elysées Theater, Paris (Le Théatre des Champs-Elysées, à Paris). Louis Gellusseau. Illustrated description of the new structure, and the use of reinforced concrete in its construction. 3500 w. Genie Civil—April 5, 1913. No. 41527 D.

Timber Preservation

Report of Committee XVII—On Wood Preservation. Considers the merits of preservatives and their use with related subjects. 3500 w. Bul Am Ry Engng Assn—Jan., 1913. No. 40223 F.

Tornado Effects

The Effect of the Omaha Tornado on Structures. Albert C. Arend. Illustrated description of the tornado and its effects, with comments on the building construction that best withstood the storm. 2000 w. Eng News—May 1, 1913. No. 41862.

Tewer Cranes

English Tower Cranes for Building Construction. Illustrated description of a type of erecting plant used very extensively in England. 800 w. Eng News—Dec. 5, 1912. No. 38060.

Tunneling Machines

The Karns Tunneling Machine. O. J. Grimes. A rotating radial cutting head

driven by compressed air for driving sixfoot tunnels. Ills. 1800 w. Eng News— March 6, 1913. No. 40563.

Tunnel Lining

Self-Supporting Tunnel-Lining Blocks. Illustrated description of a lining which is intended to eliminate timbering and afford immediate protection against falling roof. 1200 w. Eng Rec—Aug. 9, 1913. No. 44238.

Concreting a Tunnel by Compressed Air. A. C. Everham. Brief illustrated description of work by the Kansas City Terminal Ry. at Kansas City, Mo. 1200 w. Eng News—July 31, 1913. No. 44111.

Tunnels

Concrete Lined Aqueduct Tunnel Driven Under Unusual Difficulties. An account of the driving a tunnel for the water-works system of Santa Barbara, Cal., through the Santa Yuez Mts., encountering caving ground, inflows of water, and highly inflammable gas. 4500 w. Eng Rec—Nov. 9, 1912. No. 37357.

Methods and Cost of Constructing the Municipal Water Tunnel at Santa Barbara, Calif. Information from a paper by Lee M. Hyde, read before the League of Calif. Munics. Describes the difficult problems encountered. 3500 w. Engng & Con—Oct. 30, 1912. No. 37196.

Woolwich Footway Tunnel Opened. Illustrated description of the work. 1000 w. Surveyor—Nov. 1, 1912. No. 37392 A.

Driving and Lining the New Sand Patch Tunnel. Illustrated description of rapid work on the B. & O. R. R. improvement. 2000 w. Eng Rec—Dec. 7, 1912. No. 38078.

Tunnel Memorials. Illustrated description of the Bramhope memorial, erected to the memory of the men who lo.t their lives in the difficult construction work. 1000 w. Engr, Lond—Dec. 20, 1912. No. 38896 A.

Some Difficulties Encountered in Tunnel and Subway Construction in Boston. Frederic I. Winslow. Considers pipe changes in connection with the various subways, two compressed air tunnels, the building of the Deer Island reservoir, and other work. Ills. 3000 w. Jour N. Eng W-Wks Assn.—Dec. 1912 No. 39529 F.

other work. Ills. 3000 w. Jour N. Eng W-Wks Assn.—Dec., 1912. No. 39529 F. Elimination of Timbering in Rock Tunneling: A Proposal. John F. O'Rourke. Illustrates and describes method using interlocking concrete blocks. 1300 w. Eng News—Feb. 13, 1913. No. 39862.

Relining the Mauvages Tunnel on the Marne Ship Canal. Francis B. Mann. Illustrates and describes the placing of a concrete lining without serious interrup-

CONSTRUCTION

Waterproofing

2000 w. tion of traffic on the canal. Eng Rec-Feb. 22, 1913. No. 40101.

The Mount Royal Tunnel of the Canadian Northern Railway. Illustrations and notes on the progress of this work. 3000 w. Can Engr—Feb. 6, 1913. No. 39823.

Novel Tunnel Work on the Cleveland

Short Line Ry. Drawings and description of two tunnels built in open cut and One has a heavy lining of backfilled. reinforced concrete; the other has two sewers carried through the crown. 1500 w. Eng News—March 20, 1913. No. 40738.

Method and Cost of Constructing in Earth a Circular Brick-Lined Water Works Tunnel 8 Ft. in Diameter and 1,216 Ft. Long. A creditable example of day-labor construction in Chicago. Ills. 3500 w. Engng & Con—April 2, 1913.

No. 41024.

Driving and Lining a Power Tunnel at Tallulah Falls, Georgia. J. H. Graham. Illustrates and describes details of difficult rock work and pneumatic placing of concrete. 4000 w. Eng Rec-April 12, 1913. No. 41183.

Tunnel Lining on the Virginian Railay. Illustrated account of the methods used in placing concrete linings in eighteen main-line tunnels without interruption of traffic. 1800 w. Ry Age Gaz-June 20, 1913. No. 48100.

Astoria Tunnel Holed Through. Illustrates and describes the completion of a bore to carry gas mains under the East River, New York. 1000 w. Eng Rec— July 26, 1913. No. 43933.

The Astoria-Bronx Tunnel, New York Consolidated Gas Company. Brief illustrated account of this recently completed tunnel from Astoria to the Bronx under the East River, New York. 1800 w. Am Gas Lgt Jour-Aug. 4, 1913. No. 44085.

Tunnel Excavation on Section 1A of the Lexington Avenue Subway in New York. Describes methods used in building the tunnel under St. Paul's churchyard and the old Astor House, in New York City. Ills. 2500 w. Eng Rec.—Aug. 9, 1913. No. 44237.

Building a Four-Tube Steel Tunnel in Sections. Illustrated description of details of construction work of the Harlem River tunnel carried on by the Hoff system. 2000 w. Ir Trd Rev—Sept. 25, 1913. No. 45437.

Progress of the New Harlem River Tunnel. Gives a resume of the system used for the 4-track tunnel of the Lexington Ave. subway. Ills. 1200 w. Sci Am—Sept. 27, 1913. No. 45426.

Difficult Tunnel Work on the Metropolitan Railway of Paris, France. Gives par-

ticulars of exceptional work, abstracted from an article by Mr. Godfernaux in the Rev Gen. des Chemins de Fer. Ills. 1500 w. Eng News—Sept. 11, 1913. No.

Blount and Hayden Mountain Tunnels. Comparison of materials and conditions encountered and of the methods employed in driving two double-track bores. Ills. 1500 w. Eng Rec—Aug. 30, 1913. No. 44892.

Construction Plant and Methods Used in Excavating a Tunnel at Montreal for the Canadian Northern Ry. Description of the work. Ills. 3000 w. Engng & Con—Sept. 7, 1913. No. 45228.

Tunneling. Robert B. Sinclair. scribes some methods at present followed. 1500 w. Can Engr—Oct. 2, 1913.

No. 45689.

An Example of Difficult Tunneling. J. M. M. Greig. Describes the combined use of shield and compresed air on work in the city of Glasgow, subjected to un-

w. Can Engr—Oct. 16, 1913. No. 45953.
The Astoria Tunnel under the East
River, New York City. Harold Carpenter. Illustrated description of this tunnel, remarkable for its size, the size of gas mains to be installed, and the unusual difficulties overcome in its construction. 4000 w. Eng News-Oct. 16, 1913. No. 45030.

The Channel Tunnel. Discusses this proposed undertaking giving particulars. Ills. 2500 w. Engr Lond—Oct. 3, 1913. No. 45864 A.

The Mont D'Or Tunnel. An account of the difficulties encountered in the construction of the Frasne-Vallorbe line in France, and brief review of its history.

Map & profile. 1300 w. Engr, Lond—
Oct. 10, 1913. No. 45989 A.

See also English Channel, under

Bridges; Subways, under STREET AND ELECTRIC RAILWAYS; Roadway and Tunnels, under RAILWAY ENGINEERING, Perm-

anent Way and Buildings.

Underpinning

Underpinning the Cross Building, Fifth Avenue, New York. Illustrates and describes difficult underpinning made necessary in constructing an adjoining 20-story building. 1500 w. Eng News— Dec. 19, 1912. No. 38331.

Vaults

Bank Vault of the Guaranty Trust Company of New York City. Describes the construction of a vault believed to be burglar proof and fireproof. Ills. 2500 w. Eng News-Aug. 7, 1913. No. 44252.

Waterproofing

Preventing Dampness in Masonry. An

MATERIALS OF CONSTRUCTION

Cement

account of a method recently developed by Achille Knapen, a Belgian engineer. 1000

Waterproofing of Concrete. Slightly condensed report of the committee on waterproofing materials of the Am. Soc. for Testing Materials. 2000 w. Eng Rec.—July 12, 1913. No. 43656.

The Cause and Prevention of Dampness in Buildings. George Matson. Directions for the construction of a dampproof course when building and suggestions for overcoming other causes of dampness. 4000 w. Builder—Oct. 10, dampness. 4000 w. 1913. No. 45965 A.

See Cement, under Materials of Construction.

Wind Bracing

Windbracing Without Diagonals for Steel-Frame Office-Buildings. R. Fleming. Gives three methods in use of calculating wind stresses and movements in office-buildings where diagonals are not

permissible. 8500 w. Eng News—March 13, 1913. No. 40653. The Resistance of Steel-Framed Sheds to Wind Forces. Albert S. Spencer. Gives data used by the writer for sheds and similar structures. Ills. 4000 w. Engr, Lond—May 30, 1913. Serial. 1st part. No. 42786 A.

Woolworth Building
Design of the Woolworth Building. S. F. Holtzman. Considers features of substructure and calculations for wind bracing of tower. Ils. 3000 w. Eng Rec
—July 5, 1913. No. 43471.

The Woolworth Building. Cass Gilbert. Illustrated detailed description, 3000 w. Archt & Build-July, 1913. No. 43773 C.

See also same heading, under Water Supply; and same heading under ELEC-TRICAL ENGINEERING, Power Applications.

MATERIALS OF CONSTRUCTION

Asphalt

Asphalt Still a Mysterious Material. Newton Forest. Information concerning deposits and their quality, use and history. 1200 w. Sci Am—Nov. 30, 1912. No. 87974.

Asphalt Plants

Investigation of Municipal Asphalt Plants. Gives cost data collected in report by D. E. McComb, recommending plant for Washington, D. C. 4000 w. Eng Rec—Feb. 8, 1913. No. 39729.

Brick

Consistent Brickwork. George J. Jervis. Discusses artistic brickwork and the position of the architect and the manufacrer. Ills. 2000 w. Am Archt—Nov. 1912. Serial. 1st part. No. 87802 C. Some Thoughts on the Development of turer. 6, 1912. the Sand Lime Brick Industry. P. L. Simpson. Discusses some of the conditions necessary for a successful sand lime brick plant, the processes, etc. Ills. 6000 w. Cement & Engng News—Jan., 1913.

No. 89280. Sand-Lime Brick and Artificial Sand Stones in the Philippines. Alvin J. Cox, W. C. Reibling, and F. D. Reyes. Notes on investigations in progress to ascertain the suitabilty and relative efficiency of available raw materials for the manufacture of sand-lime bricks. Ills. 10000 w. Philippine Jour of Sci—Oct., 1912. No. 41706 N.

Disintegration of Brick Walls. James Scott. Illustrated description of some of the minute plants that disfigure brick walls and cause deterioration.

1200 w. Archt, Lond—Sept. 12, 1913. No. 45280 A.

Points in Bricks and Brick Construction. Robert J. Marshall. Discusses the effect of the frog in brickwork, variations in sizes, classification, mortars, and related subjects. 3000 w. Can Engr-Oct. 9, 1913. No. 45787.

See Piers, under Materials of Construction, and Brick, under Roads and Pavements.

Building Stones

Undeveloped Wealth in the Building Stones of the South. A. T. Coons. Discusses briefly the kinds and importance of the stones produced in the different states. 7500 w. Mfrs' Rec—March 27, (Special.) No. 41560 N. 1913.

Cement

The Raw Materials of the Portland Cement Industry. Percy S. Barber. The present number deals with chalk deposits 2500 w. Engr, Londin England. Nov. 8, 1912. Serial. 1st part. No. 37644 Å.

The Effect of Cement Competition on the Stone Industry. Edwin C. Eckel. Discusses the probable effects on the future development of the stone industry. 3000 w. Eng News-Dec. 5, 1912. No. 38062.

On Long-Time Tests of Portland Cement. I. Hiroi. Presents results of unfinished experiments. 1200 w. Pro Am

Soc of Civ Engrs—Dec., 1912. No. 39292 F. On Long-Time Tests of Portland Cement. Discussion of I. Hiroi's paper.

Cement

1500 w. Pro Am Soc of Civ Engrs—March, 1913. No. 41317 F.

Cement Manufacture. A number of short papers by different authors, with discussions, contributed by the Sub-Committee on Cement Manufacture. 9000 w. Jour Am Soc of Mech Engrs—Feb., 1913. No. 40151 D.

The Constitution of Portland Cement. P. H. Bates. Read before the Nat. Assn. of Cement Users. Discusses the qualitative constitution of the first burns made in the Pittsburgh kiln. 8000 w. Cement & Engng News-Feb., 1913. No. 39929.

Constancy of Volume of Accelerated Tests in Portland Cement. Reviews the discussion at the meeting of the Int. Assn. 3000 w. for Testing Materials. Engr-March 20, 1913. No. 40784.

Contributions to the Study of Pozzuolana (Contribuzione allo studio della pozzolana). G. Giorgis and G. Gallo. Additions to results shown by Paolo, Pratolungo and Bacoli on the action of this hydraulic cement. 3000 w. Il Cemento— Feb. 28, 1913. No. 40615 D.

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—April, 1913. No. 41648 F.

Growth of Cement Industry on Pacific Coast. Charles A. Newhall. Read before the Pacific N. W. Soc. of Engrs. A review of the development of this industry during about 30 years. Ills. 2500 w. Concrete-Cement Age—April, 1913. No. 41253.

Portland Cement Resources and Industry in the Southern States. Ernest F. Burchard. Explains the conditions in the South which favor cement manufacture, and the progress of the industry. Map. 4000 w. Mfrs' Rec — March 27, 1913.

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Tests of Cements and Cement Mortar
When Mixed with Oil. H. H. Scofield. Reports tests made in the laboratory of Purdue University. 500 w. Engng Soc—1912. No. 41789 N. Indiana

Action of the Salts in Alkali Water and Sea Water on Cements. P. H. Bates, A. J. Phillips, and Rudolph J. Wig. A re-

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Blended or Sand-Cement; Results of the Study and Experience of the U.S. Reclamation Service. Rapier R. Coghlan. Information concerning the materials and manufacture, with report of tests. 4000 Eng News — June 19, 1918. 42982.

Sand Cement. Discusses results obtained by using very fine material as an ingredient in cement reporting tests. 3000 w. Engr, Lond—June 13, 1913. No. 43145 A.

Experiments on the Action of Various Substances on Cement Mortars. Richard K. Meade. Read before the Am. Soc. for Test. Mat. Report of results of experiments. 2000 w. Eng Rec—July 5, 1913. No. 43470.

Fineness of Cement and Rate of Hydration. Henry S. Spackman. before the Am. Soc. for Test. Mat.) plains the important relation between these qualities. 1200 w. Can Engr—July 24, 1913. No. 43908.

Proposal for Establishing a Standard SO. Content for Portland Cement. Read before the Int. Assn. for Test. Mat. Recommendations of the German Portland Cement Mfrs. Assn. to the Int. Assn. for Testing Materials. 2200 w. Chem Engr -July, 1913. No. 43861 C.

Modern Methods in the Manufacture of H. K. G. Bamber. Portland Cement. Notes on a paper before the Vancouver Branch of the Can. Soc. of Civ. Engrs. Considers particularly the processes upon which depends the quality and reliability of the material. 2500 w. June 12, 1913. No. 42857. Can Engr-

Modern Methods in the Manufacture of Portland Cement. H. K. G. Bamber. Part of an address before the Vancou-ver branch of the Can. Soc. of Civ. Engrs. Describes processes used at Bamberton, Vancouver Island. 1800 w. Eng News—June 26, 1913. No. 43313.

Autoclave Test for Cement, D. L. & W. R. R. H. J. Force. Read before the Engrs.' Soc. of N-E. Penn. Considers causes of failures of concrete structures and describes the autoclave test required by this railroad, giving results. 4000 w. Ry & Engng Rev-Jan. 18, 1913. **39236**.

The Autoclave Test for Cement. Discussion before the American Society for

Testing Materials, at Atlantic City, June 26, and a report to the Association of American Portland Cement Manufacturers. 10000 w. Eng Rec—July 5, 1913. No. 43469.

A Bonus System for the Purchase of Portland Cements. W. C. Reibling. Discusses the weakness of cement specifications and the results from tests and proposes a bonus system for superior qualities. 5500 w. Philippine Jour of Sci—April, 1913. No. 44056 N.

Control of Dust in Portland Cement Manufacture by the Cottrell Precipitation Processes. Walter A. Schmidt. Describes the application of the Cottrell electrical precipitation processes to this problem. 2500 w. Cement & Eng News—Aug., 1913. No. 44277.

Practical Possibilities of Securing Su-

Practical Possibilities of Securing Superior Cement Quality by Improved Methods of Purchasing. Discusses the disadvantages connected with standard specifications. 1500 w. Engng & Con—

specifications. 1500 w. Engng & Con—Aug. 6, 1913. No. 44208.
Tests of Waterproofing in Cement. Cloyd M. Chapman. Calls attention to features of tests which deserve attention, and precautions necessary to avoid deceptive results. 2200 w. Con Rec—Aug. 6, 1913. No. 44228.

United States Government Specification for Portland Cement. Ills. 8500 w. Bureau of Stand—Circ. No. 33. No. 44737 N.

Cement Materials and the Manufacture of Portland Cement in Montana. W. H. Andrews. The materials are widely scattered throughout the state. Only one cement mill is in operation at present. 2000 w. Bul Am Inst of Min Engrs—Sept., 1913. No. 45473 F.

The Manufacture and Uses of Portland Cement. L. M. Bailey. Brief review of the development of the industry, methods of manufacture, and uses. Short discussion. 5500 w. Jour Assn of Engng Socs—Oct., 1913. No. 46150 C.

See also Stresses, under Measurement;

See also Stresses, under Measurement; Dams, under Water Supply, and Blast-Furnace Slag, under Mining and Metallurgy, Iron and Steel.

Cement Handling

Handling Cement in Bulk. J. H. Libberton. Discusses the efficient handling of this material, reporting a time study, and discussing related matters. Ills. 2000 w. Eng Rec—July 19, 1913. No. 43786.

Cement Mill

The New Cement Mill and Lime Hydrating Plant at Union Bridge, Maryland. Illustrated description of large mills using individual motor drive for the

operating machinery. 3500 w. Cement & Eng News—April, 1913. No. 41255.

Cement Pipes

The Action of Alkali on Cement Pipes.
Will L. Brown. Describes conditions
found in the upper San Bernardino Valley, Cal. 1500 w. Cement & Eng News
—July, 1913. No. 43688.

Cement Plants

Inland Portland Cement Plant at Metaline Falls. Detailed description of a plant in the state of Washington and its construction. Ills. 2000 w. Cement & Eng News—July, 1912. No. 43687.

The Metaline Plant of the Inland Port-

The Metaline Plant of the Inland Portland Cement Co., Metaline Falls, Wash. Milo W. Krejci. Power development, quarries and manufacturing operations at this plant. Ills. 2600 w. Bul Am Inst Min Engrs—July, 1913. No. 44019 F.

The Santa Cruz Portland Cement Company's Plant, Davenport, California. Llewellyn F. Bachman. Brief illustrated description. 2500 w. Cement & Engng News. March, 1913. No. 40628.

New Cement Plant in Vancouver. Illustrated the Company of the Compan

New Cement Plant in Vancouver. Illustrated description of a plant at Bamberton, showing the use of concrete sheet piling and heavy construction at a precipitous site. 2000 w. Eng Rec—Aug. 2, 1913. No. 44124.

The New Cement Plant at Spokane, Washington. E. W. Miller. Illustrated description of the plant and the method of handling raw materials, reducing dust trouble, and gravity loading. 3300 w. Cement & Eng News—Aug., 1912. No. 44275.

Southwestern Portland Cement Works. Charles A. Smith. Illustrated description of the plant and method of operation of works near El Paso, Tex. 2500 w. Eng & Min Jour—Oct. 18, 1913. No. 45935.

Clays

The Physical Properties of Clays. Walter C. Hancock. Brief discussion of the formation, physical properties, and related matters. General discussion. 8500 w. Jour Soc of Arts—April 18, 1913. No. 41745 A.

Concrete

Impermeability Tests on Concrete. James L. Davis. Considers the effect of the inclusion of hydrated lime, puzzolana, and clay, very fine cement, and gives new comparative figures on the variation of the mixture with the pressure, on leakage through concrete. 3500 w. Eng News—Nov. 7, 1912. No. 37320.

—Nov. 7, 1912. No. 37320.

Waterproof Concrete. Albert Grittner.
Abstract of address before the Int. Soc.

Concrete

Concrete

for Test. Mat. Reports results of experiments, especially with potash soap. 1500 w. Cement & Engng News—Nov., 1912. No. 37378.

Coefficient of Sliding Friction of Conerete on Concrete. Frank P. McKibben. Brief summary of experimental work at

Brief summary of experimental work at the Fritz Laboratory. 1500 w. Eng Rec—Dec. 28, 1912. No. 38581.

A Study of the Disintegration of Concrete in Sewage Tanks Caused by Excessive Hydrogen Sulfid. Bacterial Activity in the Disintegration. From Bul. 26, Engng. Ex. Station of Iowa State College, prepared by William M. Barr and R. E. Buchanan. Discusses the production of excessive hydrogen sulfid in sewage disposed plants and the consequence disposed plants and the consequence. sewage disposal plants and the consequent disintegration. Engng & Con—

Nov. 27, 1912. No. 87928.
Color and Texture of Concrete Products. Adolph Schilling. Illustrated discussion of surface treatment, coloring by immersion, and stone dressing methods applied to concrete. 2000 w. Concrete-Cement Age—Jan., 1913. No. 39216.
Action of Acids, Oils and Fats Upon

Concrete. W. Laurence Gadd. Abstract of a paper read before the Concrete Inst. Gives conclusions based on experimental data. 2000 w. Archt, Lond-Jan. 3, No. 89182 A. 1913.

Influence of Temperature on Concrete. Warren A. Hoyt. Gives a proposed method of figuring the increase in strength un-der cold weather conditions. 3000 w.

der cold weather conditions. 3000 w. Eng Rec.—Jan. 18, 1913. No. 39188.

Experiments on the Adhesion of Old and New Concrete. Hector St. George Robinson. Reports a series of experiments. ments to determine the relative efficiency of various methods of jointing concrete. 1000 w. Inst of Civ Engrs—No. 3999. No. 89298 N.

Variations in the Volume of Concrete, and the Strains Induced Thereby in Struc-(Volumenänderungen des Betons und dabei auftretende Anstrengungen in Beton- und Eisenbetonkörpern). Graf. Studies extending over several years. Curves. 1700 w. Zeit des Ver deutscher Ing—Dec. 21, 1912. No. 39042 D.

The Development of Unit Structural Concrete. Charles D. Watson. Explains the present development of this system, its advantages, etc., illustrating and describing structures. 3000 w. Pro Engrs' Club of Phila—Jan., 1913. No. 39960 D. The Settlement of Solids in Water and

Its Bearing on Concrete Work. Dr. J. S. Owens. Extracts from a paper read before the Concrete Inst. considers the more important factors governing the grading of stones and shingle, sand and mud.

3000 w. Surveyor—Feb. 7, 1913. No. 39910 A

Some Experiments with Mortars and Concretes Mixed with Asphaltic Oils. Arthur Taylor and Thomas Sanborn. Describes experimental tests made and states conclusions. 2200 w. Pro Am Soc of Civ Engrs — March, 1918. No.

41311 F.
Tests of the Waterproofing Properties of Oil-Mixed Portland Cement Concrete. Logan Waller Page. Explains the process of mixing oil with Portland cement concretes and hydraulic cements, reporting tests. 8500 w. Indiana Engng Soc.—1912. No. 41738 N.

A Discussion of the Economics of Practical Concrete Construction. De Witt V. A study of concrete construction, with particular regard for costs and

efficient methods. 4000 w. Indiana Engng Soc—1912. No. 41744 N.
Tests to Determine the Effect of Stone Dust in the Concrete Aggregate. Francis Dawson. Gives results and describes tests. 1800 w. Cornell Civ Engr -April, 1913. No. 41290 C.

Comparative Tests of Slag and Stone Concrete. Brief Synopsis of results of a series of experimental comparative tests. Ills. 700 w. Cornell Civ Engr—April, 1913. No. 41292 C.

The Limitations of Concrete Under Tension (Die Begrenzung der Betonzugspannungen). K. W. Schaechterle. Mathematical discussion aiming at uniform regulation in reinforced concrete construction. Ills. Serial. 1st part. 5800 w. Beton u Eisen — April 1, 1913. No. 41430 E.

Some Thermal Properties of Concrete. Charles L. Norton. Discusses results of research work in progress at the Mass. Inst. of Tech. to study the physical properties of concrete which affect its value as a fire resistant material. 3000 w. Jour Am. Soc of Mech Engrs—June, 1913. No. 42959 D.

Some Recent Applications of Concrete in Railroad Work. Frederick Auryansen. Read before the Nat. Assn. of Cement Users. Presents the advantages of this material for railroad structures, illustrating applications. 4000 w. Cement—Aug., 1913. No. 44522.

The Effect of Saturation on the Strength of Concrete. J. L. Von Ornum. Shows the importance of specifying and standardizing the moisture treatment of test specimens and considering the conditions that may affect the strength of the finished structure. 2000 w. Pro Am Soc of Civ Engrs-Aug., 1913. 44784 F.

Lime

MATERIALS OF CONSTRUCTION

Notes on the Economies of Gravel Screening for Concrete. George A. Merrill. Discusses case illustrating how to determine the proportions of unscreened material and screened gravel to use. 1500 Engng & Con-Oct. 15, 1913. No. 45889.

The Effect of Salts Upon the Strength of Concrete Cured at Low and Normal Temperatures. H. E. Pulver. A report of tests made to determine the effect of sodium chloride and calcium chloride,

separately and together. 1200 w. Wis Engr—Oct., 1918. No. 46311 C. See also Concrete, under Bridges; Con-crete, under Construction; Sewers, under Municipal; Electrolysis, under ELECTRICAL ENGINEERING. Electro-Chemistry.

Concrete Blocks

How to Produce Realistic Stone Fac-Charles H. Doubler. Suggestions for the making of artistic concrete blocks. Ills. 2500 w. Concrete-Cement Age— Dec., 1912. No. 38152.

Concrete Piles

Concrete Piles and Concrete Piling quipment Maxwell M. Upson. Re-Equipment marks on the applications of reinforced concrete and illustrated detailed description of concrete piling and its advantages. 5500 w. Cement & Engng News—Dec., 1912. No. 38200.

Foundation Piles (I pali per fondazi-Types of reinforced concrete piling, describing especially the "Conus" type. Ills. Serial. 1st part. 2000 w. Il Cemento—Nov. 15, 1912. No. 38497 D.

Concrete Plant

A Successful Concrete Products Plant in Rochester. Illustrated description of layout, equipment and methods. 1800 w. Concrete-Cement Age—Dec., 1912. 38158.

See also Timber Preservation, under Construction; and Ties, under Railway Engineering, Permanent Way and Build-

Creosote

The Production and Supply of Coal Tar Creosote. E. A. Sterling. A discussion of the question of creosote supply and its importance in the road preserving industry. General discussion. 4000 w. Wood Pres Assn — Jan., 1913. No. 48264 N.

Notes on Analysis and Testing of Coal Tar Creosote. L. B. Shipley. A résumé of some of the work carried out in the Research Laboratories of the Barrett Mfg. Co. General discussion. 5000 w. Am Wood Pres Assn—July, 1918. No.

Some Experimental Treatments. with Reference to the Effect of Initial Air Pressure on Penetration of Creosote. R. Belcher. Gives results of six experimental runs with and without initial air pressure. Ills. Discussion. 5000 w. Am Wood Pres Assn — Jan., 1913. 43267 N.

Drain Tile

See Specifications, under Materials of Construction.

Fireproof

"Eternit," a New Material for Roofs,
Walls and Floors ("Eternit," ein neues Material zur Bedachung und Bekleidung von Wänden und Decken). Describes patented tile composed of cement and as-2000 w. Glaser's Annbestos. Ills. Nov. 1, 1912. No. 38430 D.

Forest Products

Lumber, Lath and Shingles, 1911. Information based on reports from 28107 sawmills. 45 pp. Bureau of Census— May 12, 1913. No. 44052 N.

Crossties Purchased, 1911. Statistics of crossties by steam and electric roads of the United States. 2000 w. Bureau of Census—May 12, 1913. No. 44053 N. Poles Purchased, 1911. Statistics

showing number of wooden poles bought in the U.S. 1911 by railroads, electric light and power companies and telegraph and telephone companies. 2000 w. Bureau of Census—June 18, 1913. No. 44054 N.

Gravel

A Gravel Screening and Washing Plant. Illustrated description of a plant in Van-couver, of interest from the standpoint of economical layout. 1000 w. Can Engr

Jan. 9, 1918. No. 38962.
Stone Crushing and Screening, Fairmount, Ill. K. E. Casparis. Illustrates and describes a plant which produces stone for blast-furnace and cement-mills. use exclusively. 2000 w. Eng News-Jan. 16, 1918. No. 89198.

See also Panama Canal, under Waterways and Harbors.

Lath

The Lièvre Reinforced Lath (Lattis armé Lièvre). Hector Lièvre. Rolls of triangular lathing, wired together for simple and expeditious use in attaching to wood or metal joists. Ills. 2000 w. Bul Soc. d'Encour — Dec., 1912. No. 40063 E +F.

Contribution to the Knowledge of Plasters From a Technical View-Point (Contributo alla conoscenza del gesso dal punto di vista tecnico). G. Gallo. A study of lime formation, lime deposits, plaster making, etc. Ills. Serial. Il Cemento-Dec. 15, 4500 w. part. 1912. No. 39092 D.

MATERIALS OF CONSTRUCTION

Lumber Lumber

See Forest Products, under Materials of Construction.

Metallic Coatings

Recent Advances in the Spray Process for the Production of Metallic Coatings.

M. U. Schoop. Illustrates and describes the latest development of this process. 2200 w. Met & Chem Engng-Feb., 1913. No. 39685 C.

Recent Progress in Painters' Materials, ith Special Reference to Hygienic with Paints. Arthur Seymour Jennings. Read before the Edinburgh Archt. Assn. An account of improvements in materials. 4000 w. Archt, Lond—March 7, 1913. No. 40697 A.

The Use of White Lead in Painting. Noel Heaton. Gives reasons for thinking that it is indispensable to the painter.

12500 w. Jour Soc of Arts—March 14, 1913. No. 40799 A.

The Preservative of Metals Used in Marine Construction. Frank Lyon. A discussion on corrosion, the use of paints, and other methods of protection. 4500 w. Soc of Nav Archts & Marine Engrs, No. 7—Nov. 21, 1912. No. 37690 N.

Soya-Bean Oil as a substitute for Linseed Oil in Paints. Maximilian Toch. Read before the Soc. of Chem. Ind. Information concerning this oil and its use. 1500 w. Eng News—Nov. 28, 1912. No. 37943.

Notes on the Testing of Anti-Corrosion Paints. P. Labordere and F. Austett. Read before the Int. Assn. for Test. Mat. A report of research work. w. Chem Engr-Jan., 1913. No. 39496 C.

Notes on the Formation and Inhibition of Mildew in Paints. Henry A. Gardner. Describes this peculiar condition, its cause and remedy. Ills. 1200 w. Jour Fr Inst—Jan., 1913. No. 39357 D.

Paint Estimates

Estimating Amount of Red Lead Paint for Steel Work. Cloyd M. Chapman. Gives tables for estimating the area of surface and method of obtaining a reasonably close estimate. 1500 w. Eng. Rec—Feb. 15, 1913. No. 39866.

Selecting and Specifying Protective Coats for Iron and Steel. J. Cruickshank Smith. Discusses the paint, the surface, and the formation of the film, and some methods of testing paints. 3000 w. Engineering Magazine-Dec., 1912. 37788 B.

Paints for Metallic Structures. ton S. Cushman. Official report to the Assn. for Test. Mat. Reports methods of testing and results. Chem Engr-Jan., 1913. No. 39497 C.

Paint for Standpipes and Methods of Applying. A topical discussion. 2500 w. Jour N Eng W-Wks Assn—Dec., 1912.

Reinforced Concrete

No. 39532 F.

The Painting of Iron and Steel. Discusses the principles that must be observed, in our present state of knowledge, to obtain the best results from paint coatings for preservation purposes. 3500 w. Engr, Lond—Feb. 28, 1918. Serial, 1st part. No. 40491 A.

The Protection of Steel from Corrosion. Henry Williams. Presents critical problems in the preservation of modern structures. Ills. 4000 w. Engineering Magazine—May, 1913. No. 41629 B. Paint for Ironwork. G. Basil Barham.

Discusses the requirements and past and present practice. 2000 w. Surveyor-

April 25, 1913. No. 41921 A.

A Test of Red-Lead Priming Paints. Cloyd M. Chapman. Gives results of an extended series of tests of both readyw. Eng News—May 8, 1913. No. 41942.
A Practical Test of Metal-Protective

Paints. Louis H. McFadden. Report of test made on a Pennsylvania R. R. bridge across the Susquehanna River, and on prepared steel plates. 2000 w. Eng Rec —June 14, 1913. No. 42825. Powerful Influence of Basic Pigments

in Protecting Metals from Corrosion. Henry A. Gardner. Discusses factors affecting inhibitive value, results of tests, Ills. 3500 w. Eng Rec-July 26, 1913. No. 43932.

The Preservation of Metal Structures conservazione delle strutture metalliche). Bruto Laurenti. The present status of paint preservatives and the protective qualities to be desired. 2500 w. Îngeg Ferroviaria—July 15, 1913. No. 45371 D.

See also White Lead, under Materials of Construction.

Piers

Tests of Two Brick Piers of Unusual Size. James E. Howard. Read before the Nat. Brick Mfrs.' Assn. Report of tests made at the Pittsburgh laboratory, with results. Ills. 2000 w. Eng Rec-March 22, 1913. No. 40769.

See also Concrete Piles, under Materials of Construction.

Reinforced Concrete

Test Deflections in Reinforced Concrete. Percy J. Waldram. Calls attention to the want of intrinsic strength of individual members of reinforced concrete structures, reporting results of tests. 3300 w. Soc of Engra—Dec. 2, 1912. No. 38672 N.

MATERIALS OF CONSTRUCTION Reinforced Concrete Beams Reinforced Concrete

Remarks Concerning the Effect of Sea-Water on Reinforced Concrete. M. de Muralt. States results of experiments in Europe, and conclusions reached. 1800 w. Cement—Sept., 1912. No. 38340 C.

Progress Report of Special Committee on Concrete and Reinforced Concrete. An account of the appointment and work of the committee, historical sketch of use of concrete and reinforced concrete, its adaptability, materials, etc. 20000 w. Pro Am Soc of Civ Engrs—Feb., 1913. No. 40167 F.

Reinforced Concrete in Churches. V. J. Elmont. General remarks on the use of this material, with illustrations and descriptions of various applications to church architecture. 1800 w. Can Engr —Feb. 20, 1913. No. 39970.

Economy in Reinforced Concrete. John A. Davenport. Abstract of paper read before the Concrete Inst. Discussing economy in reinforced concrete slab, beam, and column construction. 2000 w. Archt, Lond—March 14, 40798 A. 1913.

Thaddeus Hyatt, an Early American Investigator and User of Reinforced Concrete. Charles M. Spofford. A brief description of the work of one of the earliest users of reinforced concrete. 2000 w. Jour Assn of Engng Socs-May, 1913. No. 42440 C.

Reinforced Concrete. Percy J. Wald-ram. Read before the Surveyors' Inst. Discusses its advantages and disadvantages, its uses and limitations. 3000 w. Archt, Lond—April 18, 1913. Serial. 1st part. No. 41746 A.

The New London County Council Regulations for Reinforced Concrete. Percy J. Waldram. Considers the effect upon design in reinforced concrete of altera-tions in the modular ratio. 3500 w. Engng—Sept. 26, 1913. No. 45739 A. The Revised L. C. C. Reinforced Con-crete Regulations. Ewart S. Andrews.

Points out where the regulations and further amendment. 2000 w. Engr, Lond—Oct. 3, 1913. No. 45870 A.

Poles, Piles and Pipe Made without Molds. R. M. Jones. Illustrated description of a method of making reinforced-concrete products. 2200 w. Cement Era—Oct. 1913. No. 45877 -Oct, 1913. No. 45877.

The Influence of Electricity on Reinforced-Concrete (Influence de l'electricité sur béton armé). G. Marlier. Results of extensive tests under varying degrees of age and mixtures. Ills. 7800 w. of age and mixtures. Ills.

Tech Mod—July 1, 1913. No. 43582 D. See also Reinforced Concrete under Bridges; Reinforced Concrete, under Construction; Reservoirs, under Water

Supply, and Reinforced Concrete, under MARINE AND NAVAL ENGINEERING. Reinforced Concrete Beams

Safely Compounded Reinforced Concrete Beams (Ausbildung verbundsicherer Eisenbetonbalken). E. Elwitz. study on the proper reinforcing for beams and slabs. Ills. 3600 w. Beton u Eisen —Oct. 2, 1912. No. 37427 E. The Determination of the Most Econ-

omical Dimension for Reinforced-Concrete Beams in the Form of Slabs (Sur la détermination des dimensions les plus économiques des poutres en beton armé formant plaques). Arthur Leipold. Mathematical. Diagrams. 3300 w. All Indus—Oct., 1912. No. 37526 D. The Value of Experiment Determina-

tions on Concrete and Reinforced-Concrete Beams (Auswertung der Ergebnisse von Versuchen mit Beton- und Eisenbetonsäulen). Joseph A. Spitzer. Tables and charts giving results of experimental research. Serial. 1st part. 4500 w. Beton u Eisen—Nov. 27, 1912. No. 38428 E.

A Time Saving Chart for Solving Problems in Reinforced-Concrete Beam Design. Donald P. Maxwell. Gives chart and illustrates its use by examples. 1000 w. Engng & Con—Jan. 1, 1913. No. 38773.

Method of Computing Reinforced Concrete T-Beams. Gunder Hansen. Gives a short method for computing when the neutral axis is in the web. 300 w. Eng

Shearing Strength of Construction Joints in Stems of Reinforced Concrete T-beams, as Shown by Tests. Lewis J. Johnson and John R. Nichols. A record of tests which seem to show results at variance with previous ideas. Ills. 4500 w. Pro Am Soc of Civ Engrs—Feb., 1913. No. 40169 F.

Some Short-Cuts in Reinforced-Concrete Beam Design. M. J. Sorente. Gives methods the writer has found convenient. 2000 w. Eng News-March 20, 1913. No. 40740.

Notes on the Calculation of Reinforced Concrete Beams (Note sur le calcul des poutres en béton armé). M. Tessier. Explanation of a graphical process for making calculations on simply flexed beams. Diagrams. 30 pp. Ann des Ponts et Chaussées—March, 1913. No. 42183 E + F.

Bending Moments in Continuous Reinforced Concrete Beams. Sanford E. Thompson. Explains the action in reinforced concrete beams, deriving bending-moment-formulæ. 2500 w. Eng Rec— June 7, 1913. No. 42715.

Reinforced Concrete Beams MATERIALS OF CONSTRUCTION

Structural Meta

Tension Conditions in Reinforced Concrete Beams Resulting from Shearing Strains Due to Transverse Forces (Ueber den Spannungszustand im Eisenbetonbalken infolge Beanspruchung durch eine Querkraft). J. Lahrs. A mathematical discussion of the conditions. Diagrams. 3600 w. Beton u Eisen-May 26, 1913. No. 43022 E.

Have Stirrups in a Reinforced Concrete Beam Any Definite Value? Edward Godfrey. Shows that stirrups are still used and sanctioned and discusses their value, explaining a much better method. Engng & Con-Aug. 6, 1918. 2000 w. No. 44211.

Shearing Strength of Construction Joints in Stems of Reinforced-Concrete T-Beams, as Shown by Tests. Continued discussion of Alexis Saurbrey's paper. 1200 w. Pro Am Soc of Civ Engrs— Sept., 1913. No. 45524 F.

A Discussion of the Principles of Design of Reinforced Concrete Beams with Special Reference to Internal Stresses, Bond and Shear. J. W. Pearl. A dis-cussion of good design. 9000 w. Engng & Con—Oct. 15, 1913. No. 45888.

See also Floors, under Construction.

Reinforced-Concrete Columns

The Reinforced Concrete Column. Carl Gayler. Critical review of the opinions of investigations, and formulae used. From the "hooped column." Ills. 3000 Jour Assn of Engng Socs-Dec., 1912. No. 38651 C.

Reinforced-Concrete Columns. Gillespie. From the Jour. of the Regina Engng Soc. Considers the restrictions too severe; examines tests made on hooped concrete columns and states in-2500 w. ferences. Ills. Con Rec-No. 43454. July 2, 1913.

Results of Some German Tests of Concrete Columns Reinforced with Cast Iron and Spiral Reinforcement. Abstract of an article by Dr. F. von Emperger. Ills. 1200 w. Engng & Con-Aug. 6, 1913. No. 44213.

Reinforced-Concrete Slabs

Calculations on Cross-Bound Reinforced-Concrete Slabs and Their Bearing Capacity (Die Berechnung der gekreuztbewehrten Eisenbetonplatten und deren Aufnahmeträger). Hugo v. Bronneck. The development of formulae for rectangular and triangular systems of reinforcing. Ills. 2600 w. Beton u Eisen—Jan. 20, 1913. No. 40033 E.

A Comparative Test of Two Full-Sized Reinforced-Concrete Flat-Slab Panels. Henry T. Eddy. Describes a comparative test of a Norcross slab and a Turner "mushroom" slab. Ills. 4000 w. Eng News-March 27, 1913. No. 40940.

Tests of Reinforced Concrete Slabs Under Concentrated Loading. Abstract of paper, and discussion, on the determination of the effective width of concrete slabs, presented before the Am. Soc. for Test Materials. 3000 w. Eng Rec.—Aug. 9, 1913. No. 44240.

Adaptability of Flat Slab Construction to Warehouses and Shops. A. M. Wolf. Illustrated article discussing the advantages of the type. 1500 w. Ry Engng & Main of Way-Oct, 1913. No.

45898.

Reinforcing Further Tests on Cast Iron Reinforcing Weitere Versuche mit umschnürten Gusseisen). Fr. von Emperger. Results with tests on certain sections not covered by previous tests made by the author. Ills. 7500 w. Beton u Eisen—Jan. 20, 1913. No. 40032 E.

Reinforcing Steel for Concrete. Olney J. Dean. Gives facts concerning different kinds of steel used for reinforcing and shows the properties of the materials. 4000 w. Indiana Engng Soc.—1912. No. 41737 N.

Rerolled Steel Rail Reinforcing Bars. W. K. Hatt. Abstract of papers read before the Am. Soc. for Test. Mat. A comprehensive investigation into the quality of this steel as a reinforcing material. 1500 w. Concrete-Cement Age—July, 1913. No. 43732.

Sand Washing

Sand and Gravel Washing Plants.
Raymond W. Dull. Read before the Nat.
Assn. of Cement Users. Drawings and
description of a plant at Peoria, Ill.
1200 w. Cement & Eng News—July,
1913. No. 43689.

Specifications

Specifications for Drain Tile and Sewer Pipe. Gives the committee report of Iowa State Drainage Assn., adopted Feb. 19, 1913. 3000 w. Eng Rec-March 1, 1913. No. 40262.

Purchasing Specifications. A discussion of questions relating to the purchase of materials. 10000 w. Pro Engrs' Soc of W Penn—May, 1913. No. 42917 D.

Steel Load Tests on an Iron Three-Way Beam Having Three Supports (Belastungs-Versuch mit einem eisernen dreiendigen Träger auf drei Stützen). Richard Sonntag. Special tests for this type of beam. Ills. 1000 w. Glaser's Ann—Nov. 1, 1912. No. 38429 D.

Structural Metal

Metals for Structures. A. T. Wolmisley. Read before the British Assn.

MATERIALS OF CONSTRUCTION

Timber

Discusses the uses to which metals are applied, the methods of protecting from corrosion, treatment, alloys, and related matters. 4500 w. Archt, Lond—Sept. 26, 1913. No. 45722 A.

Tan Bark

Harvesting Tan Bark. Samuel J. Record. Information concerning the sources and value of tanning materials. Ills. 2000 w. Sci Am Sup-June 28, 1913. No. **43203**.

Tar

Distillation of Tar: Methods of Determination and Value in Specifications. Philip P. Sharples. Read before the Am. Assn. for the Adv. of Sci. Shows the variations in methods of distilling and results, and the need for standardization. 3000 w. Engng & Con-Jan. 8, 1913. No. 38934.

Terra-Cotta

A History of Architectural Terra-Cotta. Harry Lee King. First of a series of articles describing the progressive manufacturing stages. Ills. 700 w. Archt & Bldg—May, 1913. Serial. 1st part. No. 42903 C.

A History of Architectural Terra-Cot-Harry Lee King. An illustrated description of the methods of manufac-2000 w. Archt & Build-July,

1913. No. 43774 C.

Timber

Application of Extensive Timber Tests to Design and Grading. Summary of an analysis of all tests on structural timbers made by the U. S. Forest Service during a period of nine years. 3000 w. Eng Rec—Nov. 23, 1912. No. 37759.

Mechanical Properties of Redwood. A. L. Heim. Gives results of a series of tests made at laboratories of the U.S. Forest Service. Ills. 6500 w. U.S. Dept of Agri, Circ. 198—Nov. 1, 1912. 37676 N.

Tests of Long-Leaf Pine Bridge Timbers. H. B. MacFarland. Tests made to investigate the effect of the full-cell creosote treatment. Ills. 184 pp. Bul Am Ry Engng Assn—Sept., 1912. No. 37679 E.

The Properties of New South Wales Hardwood Timbers. Gives results of timber tests conducted under the auspices of the N. S. W. Government. 5000 w. Builder—Nov. 1, 1912. No. 87884 A.

The Hardwood Timbers of New South Wales, Australia. W. H. Warren. Information concerning the strength, elasticity, and other properties, with results of tests. Ills. 4500 w. Jour Soc of Arts—Dec. 6, 1912. No. 38223 A.

Principles of Drying Lumber at Atmospheric Pressure and Humidity Diagram. Harry D. Tiemann. Considers the drying process and its basic principles as determined by Forest Service experiments. 3500 w. U.S. Dept of Agri—Bul. 104. No. 89509 N.

Messrs. J. Sadd & Sons' Timber Mills at Maldon, Essex. Illustrated description of works laid out on modern lines and equipped with modern machinery, power driven. 2500 w. Elec Rev. Lond—Dec. 27, 1912. No. 38864 A.

Dry Rot in Timber Used in Slow-Burnning Construction. Frederick J. Hoxie. Abstract of a paper presented at the Boston meeting, with short discussion. 2500 w. Jour Am Soc of Mech Engrs—March, 1913. No. 40487 D.

Mechanical Properties of Western Larch. O. P. M. Goss. Gives results of a series of tests made to determine the mechanical and physical properties of western larch, and describes the uses of the wood. Ills. 8500 w. U S Dept of Agri, Bul 122—Jan. 27, 1918. No. 40426 N.

Mechanical Properties of Western Hemlock. O. P. M. Goss. Gives results of mechanical tests made by the Forest Service upon western hemlock, and shows the uses to which it is best adapted. Ills. 9500 w. U S Dept of Agri, Bul 115— Jan. 18, 1913. No. 40425 N.

The Development of Research Work in Timber and Forest Products. E. Russell Burdon. Mainly an account of research work in the United States and the advisability of organizing a similar work in Great Britain. Discussion. 8000 w. Jour Soc of Arts-March 7, 1913. No. 40683 A.

Timber Resources of the South. Maxwell. Information concerning the annual supply of lumber and its value, and subjects relating to the industry. 4500 w. Mfrs' Rec—March 27, 1913. (Spe-

cial.) No. 41554 N.

The Appalachian National Forest as Affecting the South's Future. H. Finney. Discusses the importance of the Weeks Forestry Bill, signed by Pres. Taft, March 1, 1911, and its value to the Appalachian region. Ills. 3500 w. Mfrs.' Rec—March 27, 1913. (Special.) No.

A Modern Timber Drying Plant. Describes a "triple duct" drying kiln near London and the control system. Ills. 1200 w. Engr. Lond-June 6, 1913. No. 42893 A.

Dry Rot. Percy Groom. An explana-tion of the cause as due to fungal attack. 2500 w. Builder—May 30, 1913. Serial. 1st part. No. 42737 A.

Bending Strength of Yellow-Pine Timber. J. J. Morgan. Diagrams and tables Timber Preservation

MATERIALS OF CONSTRUCTION

Timber Preservation

giving safe loads for beams and girders of standard dimensions. 1500 w. Eng Rec—May 31, 1913. No. 42645.

The Timber Lands of Panama. Forbes Lindsay. Information concerning the quantities, qualities, lumbering, etc. Ills. 3000 w. Wood Craft—June, 1913. No. 42614.

Tests of Creosoted Timber. W. B. Gregory. Reports tests to destruction of beams which had been in use more than 29 years, taken from a trestle near New Orleans. Ills. 1500 w. Pro Am Soc of Civ Engrs—May, 1913. No. 42906 F.

Sap in Relation to the Properties of Wood. Samuel J. Record. Corrects some false ideas in regard to sap, explains what it is and its movement, and related matters. Discussion. 4500 w. Am Wood Pres Assn—Jan., 1913. No. 43272 N.

Comparison Between Quarter and Rift-Sawed Lumber. Extracts from a discussion of the technical purposes of the terms, describing methods. Ills. 1500 w. Wood Craft—June, 1913. No. 42615.

The Bending Strength of Wood (Buigrastheid van hout). M. E. H. Tjaden. Results of a series of tests on fir and oak. Ills. 3300 w. De Ingenieur—May 31, 1913. No. 43053 D.

Timber Preservation

Depth of Penetration in Timber Treatment. A letter from J. A. Lounsbury, with editorial discussion. 3000 w. Ry & Engng Rev—Nov. 9, 1912. No. 37377.

New Creosoting Plant Near Winnipeg. Illustrated description of a plant of the Canadian Pacific Ry. for treating timber for ties. 1000 w. Ry Age Gaz—Nov. 15, 1912. No. 37605.

Progress in the Knowledge of Impregnation (Fortschritte auf dem Gebiete der Imprägmierungstechnik). E. F. Petritsch. An outline of recent developments in timber preservation treatment and testing methods. Ills. Serial. 1st part. 4500 w. Elektrotech u Maschinenbau—Nov. 3, 1912. No. 38463 D.

American Wood Preservers' Convention. Abstracts of papers presented at the Chicago meeting, with résumé of discussions. 19000 w. Ry Age Gaz—Jan. 24, 1913. No. 89405.

Enlarging the Galesburg Tie Plant. Plans and illustrated description of the plant and extensions. 4000 w. Ry Engng & Main of Way—Jan., 1913. No. 39277.

Is the Impregnation of Timber for Marine Construction Economical? (Ist der Imprägnierung der Wasserbauhölzer Wirtschaftlich?) Herr Troschel. Discusses

the value of preservatives in a defense against the teredo. Ills. 1600 w. Gläser's Ann—Jan. 15, 1913. No. 40048 D.

Baltimore & Ohio Timber-Treating Plant. F. J. Angier. Illustrates and describes the layout at Green Spring, W. Va., introducing combination pressure, measuring and drain tanks. 2200 w. Eng Rec—May 24, 1913. No. 42375.

History of Wood Preservation. W. F. Goltra. A summary of the development of the industry. 11000 w. Am Wood Pres Assn—Jan., 1913. No. 43273 N.

Some Tests to Determine the Effect Upon Absorption and Penetration of Mixing Tar with Creosote. F. M. Bond. Describes experiments and results. Discussion. Ills. 12000 w. Am Wood Pres Assn—Jan., 1913. No. 43275 N.

The Requirements for Successful Timber Treatment. Hermann von Schrenk. Considers the essentials of successful treatment. Discussion. 3500 w. Am Wood Pres Assn — Jan., 1913. No. 43268 N.

The Preliminary Treatment of Timber to Insure a More Even and Satisfactory Impregnation with Creosote. David Allerton. Brief paper on the importance of seasoning, introducing a discussion. 1200 w. Am Wood Press Assn—Jan., 1913. No. 43269 N.

Preservation of Lumber for Car Construction. J. H. Waterman. Short paper introducing discussion. 2000 w. Am Wood Pres Assn — Jan., 1913. No. 43271 N.

Natural and Artificial Seasoning of Douglas Fir for Treatments. F. D. Beal. Describes processes tried. Also The Treatment of Douglas Fir with Creosote Oil. G. A. Coleman. 2500 w. Am Wood Press Assn—Jan., 1913. No. 43278 N.

New Treating Plant at Green Springs, Virginia. F. J. Angier. Illustrated description of the plant. A notable feature is the absence of preservative pressure pumps. 2000 w. Ry Engng & Main of Way—June, 1913. No. 42974.

The Development and Status of the Wood Preserving Industry. E. A. Sterling. Read before the Int. Cong. of Ap. Chem. Illustrated account of American practice. 5500 w. Sci Am Sup—July 12, 1913. No. 43496.

The Influence of the Wood Fiber on the Impregnation of Poles (Einfluss des Holz-materials auf die Kyanisierung von Leitungsmasten). Robert Nowotny. Considers the absorptive powers of various woods for telephone poles, etc.

Waste Wood

MEASUREMENT

Bending Moments

1600 w. Elek a Masch—June 15, 1913. No. 43541 D.

The Powell Saccharine Process for Seasoning and Preserving Timber. R. E. Neele. Describes the Powell process neele. Describes the rowen process and its application, giving information regarding it. 2000 w. Elec Rev, Lond—Sept. 19, 1913. No. 45556 A.

The Wood Preserving Industry. Considers methods of treating timber with preservatives. 2500 w. Ap Sci—Sept, 1012 No. 42116 C.

1913. No. 46116 C. See also Timber and Floors, under Construction; Poles, under Electrical Engineering, Transmission; Creosote, under Materials of Construction; Barges, under Marine and Naval Engineering; and Ties, under RAILWAY ENGINEERING, Permanent Way and Buildings.

Waste Wood Utilization of Waste Wood. John E. Teeple. Calls attention to the wide variation in character of the raw material and the necessity of applying the treatment best adapted. 2000 w. Met & Chem Engng—Feb., 1913. No. 39681 C. Chemical Treatment of Waste Wood.

H. K. Benson. Read before the Int. Cong. of Ap. Chem. Considers the recovery of values from low grade material. Ills. 2000 w. Sci Am Sup—June 7, 1913. No. 42670.

Waterproofing

Tests of Materials for Waterproof Concrete. Cloyd M. Chapman. Abstract of paper read before the Nat. Cement Users Assn. Reviews tests and methods 2200 w. Eng Rec-Dec. 21, of testing. 1912. No. 88828.

The Causes of Dampness in Building Walls and the New Knapen Process for Draining and Drying (Ueber Feuchtig-keitserscheinungen an Bauwerken und das neue Verfahren System Knapen für fachgemässe Trockenlegung und Assanier-ung). Fritz Willfort. Describes method and principles of special drain tile inserted in walls. Ills. 4200 w. Zeit d Oest Ing u Arch Ver-Nov. 15, 1912. No. 38458 D

Waterproofing Cement Concrete and Cement Renderings. J. H. Kerner-Green-wood. Read before the Inc. Soc. of Clerks of Work of Gt. Britain. Information concerning Pudlo powder and its uses. 2000 w. Surveyor-July 11, 1913.

No. 43896 A.

See also Floors, under Construction.

White Lead

Handling White Lead. Illustrated description of a sanitary mechanical system for eliminating dust from operations with dry material. 1000 w. Sci Am Sup-July 19, 1913. No. 43779.

Windows

Sea Shell Window Panes of the Philippines. Brief illustrated description of the decorative effects possible. 1000 w. Met Work—Jan. 17, 1913. No. 39208.

How to Select Wood for Special Uses. Charles Davis. Discusses the differences in woods and how to make proper use of them. Ills. 1800 w. Wood Craft-Aug. 1913. No. 44195.

Uses of Commercial Woods of the United States. Hu Maxwell. Information concerning beech, birches, and maples. 56 pp. Bul U S Dept of Agri
—No. 12. No. 46361 N.

See also Paper Making, under ME-CHANICAL ENGINEERING, Miscellany.

MEASUREMENT

Arithmetic

Numbering Systems. Raoul Bricard. An explanation of numbering systems, ancient and modern. 2500 w. W. Engng-July, 1913. No. 44045 C.

Beams

Reverse Bending Moments in Fixed Beams. Ewart S. Andrews. Mathematical discussion. 600 w. Engr, Lond —Aug. 22, 1913. No. 44929 A.

Beam Tests

Stanchions Carrying Excentric Loads. Ernest G. Beck. Considers the case where the load is applied at the upper end of the stanchion, within the boundaries of the cross-section. 2500 w. Engr, Lond— April 18, 1913. No. 41775 A.

Bending Experiments with a Strut from Demolished Hamburg Gasholder the (Knicknersuche mit einer Strebe des eingestürzten Hamburger Gasbehälters). H. Rudeloff. Results on a two-channel braced column at the Royal Testing L boratory in Berlin. Ills. 2700 w. Zeit des Ver deutscher Ing-April 19, 1913. 42140 D.

On the Theory of Beams Under Rolling Loads (Zur Theorie des Balkens unter Verkehrslast). Wolfgang Vogt. A study of moments. Diagrams. 2200 w. Zeit des Ver deutscher Ing-April 19, 1913. No. 42141 D.

Bending Moments

The Theorem of Three Moments. J. P. J. Williams. Derives a complete general form of the theorem, applying it to a plate-girder draw span with variable moments of inertia, to find the percentage of error introduced by the use of the usual formula. 4500 w. Pro Am Soc of Civ Engrs-Dec., 1912. 39289 F.

Bridge Stresses

MEASUREMENT

Leveling

Bridge Stresses

Conditions for Maximum Live-Load Stresses in the Pratt Truss with Curved Top Chord. C. R. Young. Mathematical

treatment of the subject. 1500 w. Ap Sci—Nov., 1912. No. 38282 C. Tests of Nickel-Steel Riveted Joints. Summary of conclusions indicated by the recent tests made at the University of Illinois to furnish information for the engineers of the Quebec bridge. 1800 w. Engng—Dec. 6, 1912. No. 38242 A. Cement Testing

The Distribution of Stress at the Minimum Section of a Cement Briquette. E. G. Coker. Read before the Int. Assn. for Test. Mat. Explains an optical method of determining the stress distribution. Ills. 1500 w. Engng—Dec. 13, 1912. No. 38525 A

Cement Sieve Specifications. R. Concerning the work of the Bu-Ferner. reau of Standards on sieve specifications and measurement. Ills. 4000 w. Eng Rec-Dec. 28, 1912. No. 38580.

Theory of Taper Columns. W. M. Wallace. Applies Euler's law to columns of varying section. 1800 w. Engng—Dec. 20, 1913. No. 38888 A.

Concrete Testing
The Compressive Strength of Concrete and Stone. Ewart S. Andrews. Considers the explanation of the apparent shear failure of concrete and stone blocks in compression; ratio between tensile and compressive strength; application to reinforced concrete columns, and other problems. 1800 w. Engr, Lond—Sept. 19, 1913. No. 45571 A.

Drain Tile Tests

Strength of Drain Tile and Sewer Pipe. Gives results of a study of the causes and prevention of pipe failures, with conclusions, based on experiments of loads in trenches. 2000 w. Eng Rec-July 12, 1913. No. 43660.

Drawings

The Photostat. Illustrated description of an apparatus which produces photographic copies on paper direct from the pencil drawing. 1500 w. Engr, Lond— Dec. 20, 1912. No. 38901 A.

Earth Pressures

Lateral Earth Pressures. Roberts J. Mann. Gives a summary of the more important theories and experiments. Ills. 4000 w. Cornell Civ Engr-April, 1913. No. 41291 C.

See also Earth Settlement, under MIN-ING AND METALLURGY, Mining.

Earthwork

A Slide Rule Method of Computing Earthwork. Frank Helm. Gives the development of special formulae and shows application. 800 w. Engng & Con-Aug. 27, 1918. No. 44775.

Floor Tests

Report of a Fire Load and Water Test Made Upon Cinder Concrete Terra Cotta and Gypsum Floor Arches. Illustrated report of a test made at the Columbia Fire Testing Station, Greenpoint, Brook-lyn, N. Y. 1500 w. Cement—Sept, 1913. No. 45686.

Flow

Flow Over Model of Sunol Dam. Joseph N. Le Conte. An account of tests by which the discharge over the main structure was estimated. 2500 w. Eng Rec -Aug. 16, 1913. No. 44488.

See also Run-Off, under Measurement, and Stream Flow, under Water Supply.

Formulas

The Construction and Use of Empiric Formulas. Cyrus T. Brady, Jr. Explains methods of constructing formulas, and applications. 3000 w. Eng News—July 24, 1913. No. 43881.

Hydrography

Hydrographic Surveying; O Harbor Development, California. Oakland W. Johnson. Describes the method that proved the best and most economical under the existing conditions. Ills. 2000 Eng News-Aug. 21, 1913. 44575.

Hysteresis

Elastic Hysteresis. Earl B. Smith. Gives results of a series of tests made to determine whether this elastic-hysteresis effect actually exists and is a measurable quantity. 1500 w. Eng Rec—May 17, 1913. No. 42223.

I-Beams

The Strength of I-Beams in Flexure. Herbert F. Moore. A report of experimental work with summary of results. Ills. 40 pp. Bul Univ of Ill, No. 68— Sept. 1, 1913. No. 46106 N.

Laboratories

The New Engineering Laboratories at University College, Dundee. Plans and illustrated description. 1200 w. Engr, Lond—Oct. 17, 1913. No. 46251 A. Hydraulic Laboratory for Irrigation Investigations, Fort Collins, Colo. V. M.

Cone. Illustrated description of the laboratory at Fort Collins, Colo., and the work in progress. 2000 w. Eng News—Oct. 2, 1913. No. 45653.

Leveling

Recent Improvements in Leveling Instruments. Dunbar D. Scott. Remarks on the fundamental requirements of leveling instruments, with criticism of types, and an illustrated description of the new

Magnetic Declinations

MEASUREMENT

Stresses

"Compensation Level" and explanation of its advantages. 6000 w. Pro Am Soc of Civ Engrs—April, 1913. No. 41645 F.

Precise Leveling in Private Practice. W. E. Jessup. Gives facts aiming to show the desirabilty of precision levels in private practice because of their low cost, speed, simplicity, reliability and accuracy. 2500 w. Wis Engr — March, 1913. No. 41572 C.

Precise Leveling in New York City. Frederick W. Koop. Gives in detail the organization and methods of work and the whole procedure. 8000 w. Eng News Sept. 4, 1913. No. 44985.

Magnetic Declinations

The Determination of the Magnetic Meridian. J. A. MacDonald. Directions for observing with explanation of a specimen observation. 2000 w. Con Engr—Sept. 4, 1913. No. 44958.

Made

A Land Map of the World on a New Projection. B. J. S. Cahill. Points out the inadequacy of the projections now in use, and explains the principles of the new projection, showing some of the uses to which it can be applied. Ills. Discussion. 14400 w. Jour Assn of Engng Socs—Oct, 1913. No. 46148 C.

Meters

Characteristics of Cap and Screw Current Meters; Performance of These Meters in Tail-Races and Large Mountain Streams; Statistical Synthesis of Discharge Curves. Continued discussion of B. F. Groat's paper. 6500 w. Pro Am Soc of Civ Engrs — April, 1913. No. 41649 F.

Development in V-Notch Recording Meter. Joseph Esherick. Explains the advantages of this type of meter for measuring water and other liquids. Ills. 1000 w. Power—July 15, 1913. No.

43698.

Photography

Photography in a Pneumatic Tool Plant. Illustrated description of methods used in connection with the work of the Ingersoll-Rand Co.'s publicity bureau. 1200 w. Ir Age—Nov. 14, 1912. No. 37750 C.

Pitot Tube

Origin and Theory of the Pitot Tube. A. E. Guy. Critical discussion of articles by John Airey, and reviewing information concerning Pitot tubes. Ills. 3500 w. Eng News—June 5, 1913. No. 42699.

Planetables

Planetable Methods as Adapted to Geologic Mapping. Carroll H. Wegemann. Gives a detailed description of planetable methods as adapted to geologic mapping in areas where no adequate base map is at hand. Map. 6500 w. Ec-Geol
—Oct.-Nov., 1912. No. 38500 D.

Rock Tests

The Physical Testing of Rock for Road Building. Albert T. Goldbeck and Frank H. Jackson, Jr. From the Office of the Pub. Roads, Bul. 44. On the methods used and results obtained. Ills. 2500 w. Sci Am Sup—Nov. 9, 1912. Serial. 1st part. No. 37340.

Run-Off

Derivation of Run-Off from Rainfall Data. Joel D. Justin. Gives methods and formulae derived from a study. 2500 w. Pro Am Soc of Civ Engrs—Aug., 1913. No. 44783 F.

Slabs

Bending Moments in Flat Slabs. V. J. Elmont. A modification of Grashof's general bending moment theory, for consideration of uniformly distributed load. 800 w. Can Engr—Sept. 25, 1913. No. 45503.

Slide Rules

Some New Slide Rules and Their Accuracy. Harold A. Thomas. Considers some of the slide rules now in use and their merits and demerits, and also some new rules and their advantages. 4500 w. Indiana Engng Soc — 1912. No. 41730 N.

Soil Tests

Hardpan and Other Soil Tests. J. Norman Jensen. Describes tests made in Chicago and reports results. 2500 w. Eng News—March 6, 1913. No. 40353.

Solar Observations

Azimuth by Direct Solar Observation. Louis Ross. Gives a formula developed by the writer with explanation of the method. Diagrams and tables. 3000 w. Eng News—March 6, 1913. No. 40352.

Stadia Float

Current Observations with a Stadia Float. B. L. G. Rees. Reports conditions and observations in connection with bulk-head construction at Brunswick, Ga., illustrating and describing the float used. 1600 w. Eng News—Feb. 20, 1913. No. 39977.

Stone Testing

See Concrete Testing, under Measurement.

Stresses

An Experimental Determination of the Stresses in a Roof-Truss. Cecil Howard Lander, Gilbert Cork and Joseph Ernest Petard. Report of an experimental roof-truss tested to destruction. Ills. 2000 w. Inst of Civ Engrs—No. 3944. No. 39297 N.

Calculations on Arched Beams (Berechnung gewölbter Platten). Huldreich Keller. Mathematical determination of stress-

Surveving

es induced from arch action. Ills. Serial. 1st part. 5500 w. Zeitschr des Ver deutscher Ing-Dec. 7, 1912. No. 39034 D.

Calculations on the Deflection of Continuous Beams (Berechnung der Durchbiegungen kontinuierlicher Balkentrager). Michael Gombos. Formulae for reinforced-concrete highway bridges. Ills. 3300 w. Beton u Eisen—Feb. 13, 1913. No. 40524 E.

Kinetic Effects of Crowds. C. J. Tilden. An experimental study attempting to throw light on the question of determining and analyzing the forces exerted by an individual in motion, applying to the effect of crowds. Ills. 4500 w. Pro Am Soc of Civ Engrs-March, 1913. No. 41309 F.

The Theorem of Three Moments. Continued discussion of J. P. J. Williams' paper, with author's closure. 2500 w. Pro Am Soc of Civ Engrs—March, 1913. No. 41320 F.

Initial Stresses in Structural Steel. Joseph R. Worcester. Shows the prevalence of initial stresses and considers their origin. Shows the importance of eliminating cold straightening as far as possible from the shop treatment of metal for compression members. 2000 w. Jour Assn of Engng Soc — April, 1913. No. 41287 C.

Simple Method for Determining Stresses in Hingeless Elastic Arch Ribs. T. J. Wilkerson. Describes method, applying to an example. Ills. 7500 w. Pro Engrs' Soc of W Penn—March, 1913. No. 41689 D.

Report on Test for Actual Stresses of the A. J. Franks Building. W. K. Hatt. Illustrated report of tests of a reinforced concrete building. 1500 w. Engng Soc—1912. No. 41736 N. Indiana

Approximate Calculations on Rectangular Plates (Angenäherte Berechnung rechteckiger Platten). H. Lorenz. Empirical formulae evolved from definite bases. Diagrams. 2300 w. Zeit des Ver deutscher Ing-April 19, 1913. 42142 D.

The Distribution of Stress in a Cement Briquette. E. G. Coker. Illustrated description of an optical method for the investigation of the strains in a body under stress. 1800 w. Sci Am Sup-June 21, 1918. No. 42943.

General Method for Drawing Influence Lines for Stress in Simple Trusses. Malverd A. Howe. Mathematical study. Diagrams. 2000 w. Eng News—June 12, grams. 2000 w. 1913. No. 42813.

The Measurement of Actual Stresses. thur R. Lord. Treats of present Arthur R. Lord. progress and future possibilities in determining actual stresses in reinforcedconcrete buildings. 2000 w. Cement Age—July, 1913. No. 43733.

See also same heading, under MECHAN-ICAL ENGINEERING, Measurement.

Surveying

Laying-Out Curves (Sur le tracé des courbes). M. Laplace. Special problems of difficult nature; when point of intersection is inaccessible or not visible; when points on curve are inaccessible; when point of tangency is not visible, etc. Ills. 2000 w. Bull Tech d l Suisse Romande -Oct. 25, 1912. No. 37506 D.

Notes on Signals for Use in Hydrographic Surveying. A. Rust. Drawings and description of steel signal towers and their use, the signals, and proper outfit for efficient surveying. 4500 w. Pro U S Nav Inst—Dec., 1912. No. 38642 E. City Surveying in Brooklyn. John B. Stein. Read before the Brooklyn

Engrs'. Club. Describes the duties and organization of the Topographical Bureau, and work of the bureau. Ills. 5500 w. Eng News—Dec. 19, 1912. No. 38332. Surveys of Property in Pennsylvania.

Louis P. Blum. Discusses circumstances which must be considered in establishing property lines in accordance with original lines and the laws of the Commonwealth. General discussion. 16500 w. Pro Engrs

Soc of W Penn—Oct., 1912. No. 38279 D.
Method of Conducting Topographic
Surveys for Drainage Districts. Walter Surveys for Drainage Districts. Walter A. Birket, in a paper before the Ill. Soc. of Engrs & Survs. Discusses the purpose of topographic surveys for drainage work and describes methods of conducting them. 2500 w. Engng & Con—March 12, 1913. No. 40457.

Precise Surveys for Mount Royal Tun-

nel. J. L. Busfield. Describes methods of procedure in surveying for this tunnel on the Canadian Northern Ry. near Montreal. Ills. 2500 w. Can Engr—Feb. 27, 1913. No. 40296.

Stereophotographic Surveying. Lemberger. A short history of the development of photographic surveying in Europe, with examples; the invention of stereophotogrammetry, its practice and theory, and description of the instruments used. Editorial. Ills. 8500 w. Eng News- March 27, 1913. No. 40937.

Theory and Practice of Stadia Surveying. J. A. MacDonald. Encourages the

use of this method of surveying. 3500 w. Can Engr—April 3, 1913. No. 41101. The Topographic Survey of Cincinnati. Hugh C. Mitchell. Describes the survey of a thickly settled city, primarily for the improvement of the sewerage system, giving the various steps in detail. Ills.

MEASUREMENT

Venturi Meters

3500 w. Eng News-April 3, 1913. No. 41065.

Fieldwork and Computations for Laying Out Subdivisions on Curved Street Lines. J. H. Anderson. Describes some of the problems met in laying out the work. 2000 w. Eng News—April 24, 1918. No. 41623.

Base Line Measurement. Edw. K. Smith. Deals with methods of measure-

ment of geodetic base lines. 3000 w. Wis Engr.—May, 1913. No. 42444 C. Stereo Photo Surveying. Henry Hess. An account of the remarkable results made possible by this apparatus. Ills. 3000 w. Prof Engrs' Club of Phila—April, 1913. No. 42364 D.

Surveying by Photography. Benjamin Smith Lyman. Suggests methods of applying photography to surveying. 1200 w. Pro Engrs' Club of Phila—April, 1913. No. 42365 D.

A Topographical Survey of the Spirit and Okohoji Lekes Barrier.

and Okoboji Lakes Region. H. C. Ford. Descriptive account of the work. Map and Ills. 36 pp. Bul No. 32, Iowa State College of Agri and Mech Arts—March,

1913. No. 43759 N.
Points in the Progress & Inspection of Surveys. E. W. Hubbell. Historical sketch of the growth of the Canadian Department of the Interior surveys branch, and related subjects. 6500 w.

Can Engr—Aug. 14, 1913. No. 44396.
Some Practical Examples of Provincial Land Surveying. J. A. Macdonald. Shows the wonderful accuracy of old compass surveys, and gives typical instances in the re-survey of old lines. where the surveyor must arbitrate. 3000 Can Engr—Sept. 25, 1913. 45504.

Plane Table Survey in Asia Minor. Lloyd T. Emory. An account of experiences in mountain work with Turkish rodmen, and side lights on the people, country and climatic conditions.. Ills. 2500 w. Eng Rec—Oct. 18, 1913. 45942.

Topographical Surveys Made by the American Section of the International Boundary Comission, United States and Mexico. W. W. Follett. Describes meth-ods and gives results of work. 14500 w. Pro Am Soc of Civ Engrs—Oct, 1913. No. 46343 F.

See also Solar Observations, under Measurement, and Bore-Hole Surveying, under MINING AND METALLURGY, Mining.

Surveying Instruments See Location, under RAILWAY ENGI-

NEERING, Permanent Way and Buildings.

Testing Laboratories The Testing Laboratory and the Constructing Engineer. H. W. Hayward. Abstract of paper read at Boston, with short discussion. The importance of testing materials. 1800 w. Jour Am Soc of Mech Engrs-March, 1913. No. 40438 D.

Some Studies on the Testing of Materials of Construction (Sugli studi e sulle prove dei materiali da costruzione). I. Maganzini. First part is an historical sketch of former crude methods of testing various materials. Ills. Serial. 1st part. 2000 w. Il Cemento—April 30, 1913. No. 42505 D.

Theodolites

Specification of a Precision-Theodolite. L. H. Cooke. Outline of a specification of a theodolite for mining purposes and other precise work. Ills. 4000 w. Inst of Min & Met, Bul 99—Dec. 12, 1912. No. 38880 N.

Some Considerations on the Specification of Theodolites for Mines. L. H. Cooke. Calls attention to defects in these instruments used for mine surveying, and gives a specification. 11000 w. Inst of Min & Met, Bul 100—Jan. 9, 1913. No. 39549 N.

Discussion on "Some Considerations on the Specification of Theodolites for Mines" and "Specification of a Precision of Theodolite: For Workings on Lodes of Medium Inclination and Narrow or Medium Thickness." L. H. Cooke. With contributed remarks and author's interim reply. 19500 w. Inst of Min & Met, Bul 101—Feb. 13, 1913. No. 40216 N.

Timber Testing

See Timber, under Materials of Construction.

Topographical Bureau

The Topographical Bureau of the Borough of Brooklyn, City of New York; Its Relation to Other Bureaus, and Its Importance in City Government. John B. Stein. Explanation of the organiza-tion and work of this bureau. Discus-sion. Ills. 5000 w. Brooklyn Engrs' Club-1912. No. 46398 N.

Truss Calculations

Design and Graphic Method for Calculating a Steel Truss. Leonard Goodday. Gives a stress diagram as applied to design of roof for gymnasium. Ills. 700 w. Can Engr-Aug. 14, 1913. No. 44394.

Venturi Meters

Venturi Meter Coefficients. Allen azen. Discusses errors in Venturi measurements. Also discussion by Clemens Herschel and J. W. Ledoux, with Mr. Hazen's reply. 5000 w. July 31, 1913. No. 44109. Eng News-

Wind Pressure

MUNICIPAL

Cost Keeping

Wind Pressure

Wind Pressure on Buildings. Albert An account of tests made on model buildings, particularly mill buildings and other open structures not braced by intermediate floors. Ills. General discussion. 7000 w. Jour W Soc of Engrs-Dec., 1912. No. 39337 D.

MUNICIPAL

Atmospheric Pollution

Methods for Investigating and Recording Atmospheric Impurities, Including the Soot and Dust Suspended in the Atmosphere. John B. C. Kershaw. Gives methods that have been suggested or tried. Ills. 3000 w. Med. & Chem Engng—June, 1913. No. 42609 C.

Bath Houses

Sanitary Features of Coney Island Bath House. Harold L. Alt. Plans and description of arrangements at the new municipal bath house. 1200 w. Dom Engng—Dec. 21, 1912. No. 88877.

See Public Baths, under Water Supply. Budgets

See Public Works, under Industrial ECONOMY.

City Planning

The Chicago Plan. Charles H. Wacker. Explains the problem at Chicago and outlines the objects of the future plan. 3000 w. Jour W Soc of Engrs—Jan., 1913. No. 39956 D.

City Planning as Practised in Europe. L. S. Smith. Considers the aims of city planning in Germany and England, and the results. Ills. 3000 w. Wis Engr— March, 1913. No. 41576 C. Scientific City Planning. George B.

Ford. Read at the Fifth Nat. Conference on City Planning. An outline for a standardized procedure by means of which a proper plan can be determined. 3500 w. Engng & Con-May 14, 1913. No. 42088.

The Planning of City Streets. B. Antrim Haldeman. Discusses the importance of the street system and some of its problems, illustrating and describing streets in Germany and other countries. General discussion. 8800 w. Pro Engrs' Club of Phila—April, 1913. No. 42366 D.

A City-Planning Program. Frederick Law Olmstead. Discusses and describes a City Plan Office and its important work. 5000 w. Jour Am Inst of Archts—June, 1913. No. 42717 D.

The Land Tax Method of Raising Funds for the Park and Boulevard System of Kansas City, Mo. Gives method as described by George E. Kessler in a paper at the fifth national conference on city planning. 2200 w. Engng & Con—June 18, 1913. No. 42939.

Transportation and City Planning.

Milo R. Maltbie. Abstract of a paper read at Chicago. Emphasizes the close relation between city development and transportation facilities. 2200 w. Elec Ry Jour—June 21, 1913. No. 43117.

Suggested Plan of Procedure for City Planning Commission. Abstract of a report by Messrs. E. P. Goodrich and Geo. B. Ford, giving matters relating to streets. 4000 w. Engng & Con—Aug. 27,

1913. No. 44774.

Important Elements in Town Planning. Christopher J. Yorath. Considers briefly the aim, points to be considered, building restrictions, &c. 3000 w. Con Rec—July 30, 1913. No. 44141.

The Preparation of Town Planning Schemes. J. E. Wilkes. Discusses the fundamental principles of the subject. Ills. 3000 w. Surveyor-Aug. 15, 1913.

No. 44715 A.

City Planning. Richard Schermer-horn, Jr. Considers what has been accomplished in Europe and in American cities, work in progress, and the needs of Brooklyn. Ills. Also discussion. 9500 Brooklyn Engineers' Club-1912. No. 46396 N.

See Town Planning, under Municipal.

City Supplies

Central Purchase and Distribution of Supplies for New York City. Gives a plan for controlling and standardizing purchasing methods of 128 different municipal departments and boards. 4500 w. Eng Rec-March 29, 1913. No. 40960.

City Surveys

See Surveying, under Measurement.

City Traffic

The Enormous Traffic in Large Cities. Eugen Fassbender. Considers railway installations, traffic, pedestrians and in-dependent vehicles, and the problems re-lated. Ills. 3000 w. Bul Int Ry Cong June, 1913. No. 43172 G.

Henry Har-A Five-Storied Street. rison Suplee. Illustrates and describes a plan for handling congested traffic in large cities. 1500 w. Cassier's—June, 1913. No. 42868 B.

Cost Keeping

Cost-Keeping as Applied to Municipal Management of Street Cleaning. Ab-stract of a paper, by G. W. Raxton, read before the Am. Pub. Health Assn. Brief description of the system developed at

Garbage Disposal

Washington, D. C. 2000 w. Con—Sept. 17, 1913. No. 45226. Engng &

Delhi, India

The Government and Public Works of Delhi. India. Tom Salkield. Slightly condensed from Jour. Roy. San. Inst. Considers the water works, drainage, refuse collection and disposal, and general features. 3300 w. Eng News—May 22, 1913. No. 42353.

Drainage

Glasgow Main Drainage Scheme. Frank I. Cohen. Illustrated description of one of the largest installations of its kind in the world. 8500 w. Sci Am Sup

-Dec. 7, 1912. No. 88072.

Main Drainage of Glasgow. Paper 3991 by Alexander Beith McDonald and Gotfred Midgley Taylor, Paper 3986 by William Cecil Easton, Paper 3981 by David Home Morton, discussed together. Plates. 127 pp. Inst of Civ Engramarch 19, 1912. No. 39271 N.

Prevention of Mosquito Breeding, Spencer Miller. Gives the "Mosquito Brief" prepared by the American Mosquito Extermination Society, with related information. 3000 w. Pro Am Soc of Civ Engrs—Nov., 1912. No. 38288 F.

Prevention of Mosquito Breeding. Discussion of the paper by Spencer Miller. 2000 w. Pro Am Soc of Civ Engrs— Jan., 1913. No. 39391 F.

The Main Drainage of Gerrards Cross. Arthur Gladwell. Read before the Inst. of Marine & Co. Engrs. A descriptive account, explaining the difficulties. General discussion. 5600 w. Surveyor— May 2, 1913. No. 41999 A. West End Drainage Scheme, Ottawa.

L. McL. Hunter. Line Drawings and description, with costs. 1000 w. Con Rec-

April 30, 1913. No. 42073.

See also Sewerage, under Municipal, and Drainage, under RAILWAY ENGINEER-ING, Permanent Way and Buildings.

Efficiency

Work of the Efficiency Division, Chicago Civil Service Commission. Extracts from a report summarizing four years' work and showing how such an organization can improve municipal administration. 3000 w. Eng Rec-June 7, 1913. No. 42713.

Financing

The Financing of Municipal Works. R. O. Wynne-Roberts. A comparison of British, Canadian and South African methods. 4000 w. Can Engr—Aug. 14, 1913. No. 44399.

Fire Alarms

Recent Developments in Operating Equipment in St. Louis Fire-Alarm Office. George McD. Johns. Read before the St.

Louis League of Elec. Interests. scribes the new equipment recently installed in the St. Louis City Hall. 2200 w. Elec Rev & W Elect'n-April 5, 1913. No. 41104.

The "Knight" Public Fire-Alarm System. E. E. Moore. States the requirements the apparatus was designed to cover and illustrates and describes the instruments and their working. 8000 w. Inst of Elec Engrs-Jan, 1913. No. 43296 N.

Fire Apparatus

Recent Motor Equipment in the New York Fire Department. Remarks on the changes in progress in all the fire departments in the United States and the efforts to improve the types of motor fire apparatus, considering types in detail. Ills. 4500 w. Engng—March 14, 1913. Serial, 1st part. No. 40821 A.

Fire Losses

Cities Unburnable! F. W. Fitzpatrick. Discusses the uselessness of our enormous fire losses. Ills. 2500 w. Cassier's—June, 1913. No. 42864 B.

Fire Prevention

Methods of Fire Prevention. An account of the excellent work done by the British authorities. 2500 w. Sci Am Sup—March 15, 1913. No. 40638. See also Fire Extinguishers, under

MARINE AND NAVAL ENGINEERING.

Food Preservation

The Scientific Advancement of the Canning Industry. R. T. Mohan. Read before the Canadian Sec of the Soc of Chem Ind. Illustrated review of the canning industry, the early difficulties, present methods, utilization of waste products, etc. 6000 w. Sci Am Sup—July 19, 1913. No. 43781.

Garbage

Methods of Garbage Disposal Applicable to Conditions in the Smaller Cities. with Some Costs and Other Data. Samuel A. Greeley. Read before Illinois Soc. of Engrs & Survs. Discusses the Methods economically available for cities of from 10,000 to 75,000 population. 3500 w. Engng & Con—Feb. 12, 1913. No. 39834. Garbage Disposal

A Summary of the Arguments and Conclusions of the Members of the Board of Appraisers of the Chicago Garbage Reduction Plant. The purpose of the appraisal was to determine the fair price that the city should pay for the privately owned garbage plant. 6500 w. Engng & Con—Oct. 22, 1913. No. 46129. Destruction of Garbage by Incinera-

tion. H. C. Andrews. Shows that this is the most hygienic method of dealing with garbage, and considers the design of a

modern plant. 1500 w. Can Engr—Oct. 16, 1913. No. 45954.

Results of Garbage Reduction at Colum-

bus, Ohio. Describes briefly a solution of the problem resulting in profit. 1600 w Munic Engng—Oct, 1913. No. 46144 C.

Housing

The Housing Problem and Its Solution. Reginald Brown. Read before the Inst. of Munic. & Co. Engrs. Discusses the subject in relation to town planning. General discussion follows. 9500 w. Surveyor-Sept. 12, 1913. No. 45292 A. Incinerator

Islais Creek Incinerator at San Fran-Illustrated description of municipal plant embodying the latest ideas in incinerator practice. 1500 w. Eng Rec—Aug. 16, 1913. No. 44427.

Leeds

Some Municipal Works and Practices in Leeds. W. T. Lancashire. Read before the Munic. & Civ. Engrs. Brief review of important undertakings. 2000 w. Surveyor — March 21, 1913. No. 41006 A.

London

Greater London: Its Area, Population, and Traffic. A. J. Lawson. General information and statistics. 6000 w. & Ry Wld — March 13, 1913. 41003 B. Tram

Mine Effects

Mining Effects upon Public Structures, Especially Street Railways, and Measuret for Lessening the Dangers (Einwirkung des Bergbaues auf Gebäude, öffentlich unbesonders Strassenbahn-Anlagen, sowie Massnahmen zur Minderung, der Schä-den) Hr. Nolden. An outline of the damages on streets and buildings, with methods of preventing same. Ills. Serial, 1st. part. 4000 w. Elek Kraft u Bahnen—Oct. 4, 1913. No. 46094 D.

Municipal Law

Legal Questions Involved in the Proposed Amendments to the General Municipal Law of New York. William M. Bowman. Law in regard to contracts is discussed and criticized. 11000 w. Jour Am Soc of Engng Contr—April, 1913. No. 43756 C.

Muncipal Plants

Holyoke Municipal Gas and Electric Works. Reviews the history of develop-ment of ten years of municipal ownership. Ills. 2500 w. Munic Jour-Aug. 7,

1913. No. 44288.

Seattle's Municipal Light and Power Plant. J. D. Ross. Brief illustrated description of a plant of 20,000 h. p., which lights 6,000 street lamps and serves 27,000 customers, earning 8 per cent. 1500 w. Munic Jour—Aug. 7, 1913. No. 44289.

Wallingford Municipal Electric Works. Illustrated description of a plant in a city of 11,000, operated by steam and water power. 2200 w. Munic Jour—Aug. 7, 1913. No. 44290.

Refuse

Municipal Works

Wrexham and Its Municipal Works.
J. England. Read before the Inst. of
Munic & Co. Engrs. Illustrated description, with discussion. 5500 w. Surveyor

-Oct. 25, 1912. No. 87290 A.

Business Methods for Municipal Enterprises and improvements, from an En-View. gineering Shinn. Point of Eugene Gives a resumé of municipal work during the past 25 years, improve-ments introduced, and an explanation of a plan worked out by the author, also discussion. 7000 w. Brooklyn Engrs' Club—1912. No. 46397 N.

Newcastle, Eng.
Ouseburn Valley Works. Frank I. Morgan. An illustrated account of the filling of this valley which intersects Newcastle, the making of thoroughfares, and a reinforced-concrete culvert. Also discussion. 7500 w. Surveyor-May 16, 1913. No. 42533 A.

New Jersey Rules
Rules Governing the Submission of
Sewerage and Water-Supply Plans to the
New Jersey State Board of Health. Reprint in full of rules for sewerage and sewage disposal and parts of the rules for water supply. 4000 w. Eng News— Sept. 18, 1913. No. 45221.

Rules and Regulations of the New Jersey State Board of Health Relative to Reports on Water Supply and Water Purification Systems. The requirements with which all applicants should comply. 2000 w. Engng & Con-Sept. 24, 1913. No. 45455.

Uniformity in Sewer Plans. Gives New Jersey State Board of Health's new Gives regulations. 2500 w. Eng Rec-Sept. 6, 1913. No. 44998.

Purchasing

Cincinnati's Purchasing System. scribes a simple system so complete that information on any purchase can be se-2000 w. Munic cured immediately. Engng-Sept., 1913. No. 45208 C.

The British Method of Disposing of House Refuse by Crushing and Pulverizing It to a Fertilizing Powder. James Drawings of the crusher A. Seager. and description of the method. 1800 w. Engng & Con—July 23, 1913. No. 43875. Mixed Method Garbage and Waste Dis-

posal. E. B. Stuart. Describes the garbage and waste disposal plant at Boulogne-sur-Mer, France. Ills. 3500 w. Munic Engng—July, 1913. No. 44036 C.

Sanitation

Refuse Collection

Street Cleaning and Garbage Collection Methods in Chicago. Equitable distribution of funds is sought by standardizing the work. 4000 w. Eng Rec—Jan. 4. 1913. No. 38805.

Refuse Destructors

Salient Features of Modern Refuse Destructor Practice in Great Britain. James A. Seager. Gives typical examples which indicate the advance made. 2500 w. Engng & Con—Feb. 12, 1913. No. 39835.

Recent Refuse Destructor Plants (Neuere Müllverbrennungsanlagen). Norbert Wechsler. General characteristics of the more important European types of furnaces and equipment. Ills. Serial. 1st part. 4800 w. Zeit d Oest Ing u Arch Ver—April 11, 1913. No. 42147 D.

A Test of a Refuse Destructor at Smethwick. W. Naylor. Illustrated account of the plant and test. 1500 w. Surveyor—May 23, 1913. No. 42749 A. Improvement in Garbage Incinerators.

Improvement in Garbage Incinerators. John Hammersley-Heenan. Illustrates and describes early and improved designs. 3000 w. Con Rec.—July 16, 1913. No. 43816.

Refuse Disposal

The Studies Made in Estimating the Cost of Refuse Disposal in Chicago. Gives estimates of cost and characteristics by wards for rubbish and garbage service in Chicago. Map. 4000 w. Engng & Con—Jan. 15, 1913. No. 39185.

The Development of the Pentre Valley in Relation to the Destructor. G. H. Bell. Describes the refuse destructor, explaining the advantage to the corporation. Ills. 2500 w. Surveyor—Jan. 17, 1913. No. 39467 A.

The Exportation and Sale of City Refuse (Dell'esportazione e dello smaltimento delle immondizie urbane). R. Badoglio. Details of Italian methods of refuse collection and garbage disposal. Ills. Serial, 1st part. 5400 w. Ann della Soc d Ing e d Arch Ital—Feb. 1, 1913. No. 40607 E.

Pasadena's Refuse Incinerator. C. L. Edholm. Illustrated description of the plant, with report of efficiency of a plant of the same type at Portland, Ore. 1500 w. Munic Jour—April 17, 1913. No. 41325.

Electricity from Sweepings (Elektrizität aus Kehricht). F. P. Tillmetz. A use for street sweepings, garbage and other refuse, and examples of such utilization. Ills. Serial. 1st part. 5500 w. Elek Kraft u Bahnen—March 14, 1918. No. 41501 D.

Collection and Disposal of Boston Refuse. Describes plan for delivering municipal wastes to waterfront stations, whence it is transferred to an island and disposed of by reduction and incineration. Ills. 5000 w. Eng Rec—May 10, 1918. No. 41954.

New York City's New Garbage Disposal Contract. Gives the conditions of a remarkable contract recently signed. 2000 w. Eng News—Aug. 7, 1913. No. 44254.

See also Incinerators and Garbage Disposal, under *Municipal*.

Refuse Removal

The Principles of Municipal Refuse Collection. Samuel A. Greeley. Deals chiefly with the collection of house refuse; the house treatment, the collection, and the disposal of the refuse. Ills. Discussion. 16500 w. Jour W Soc of Engrs —Nov., 1912. No. 38560 D.

A Factory Refuse Removal System. Illustrated description of a design of blower piping and other shavings removal equipment of a wood-working plant. 1200 w. Met Work—Dec. 13, 1912. No. 38191.

Sanitary Ware

Porcelain Enameled Iron and Its Relation to Sanitation. C. B. Nash. Introductory remarks on early methods of enamelling, especially considering its application to sanitary ware. Ills. 2000 w. Plumb & Dec—Aug. 1, 1913. No. 44302 A.

Sanitation

Sanitation—Some of the Things We Must Face. D. G. McLeod. Read before the Duluth Archt. Club. Discusses the importance of good plumbing, the sanitation of public buildings, factories, etc. 2500 w. Dom Engng—Dec. 21, 1912. No. 38378.

Sanitary Engineering in 1912. Reviews the progress in England mainly. 3000 w. Engr, Lond—Jan. 3, 1913. No. 39162 A.

Engr, Lond—Jan. 3, 1913. No. 39162 A. Seeing New York With the Sanitary Engineer. J. X. Cohen. Notes relating to water filters, sewage works and refuse destructors in or near the city. 4000 w. Eng Rec—Jan. 18, 1913. No. 39191.

Sanitation at Mining Villages in the Birmingham District, Ala. Dwight E. Woodbridge. Describes the sanitary conditions of this iron mining district in 1912 and earlier and the methods successfully practiced. Ills. 6000 w. U. S. Bureau of Mines—Tech. Paper 33. No. 45499 N. The Lesson of Canal Zone Sanitation.

The Lesson of Canal Zone Sanitation.

J. S. Lankford. Describes the conditions in the canal zone when the United States took charge, and the wonderful sanitary work and the change it wrought. 2000

w. Pop Sci M—Sept., 1913. No. 45177 C.

See Panama Canal, under Waterways and Harbors.

Seattle

Development of Seattle. Describes the plans for the extension of steamship terminals. Ills. 1400 w. Marine Rev—June, 1913. No. 42806 C.

Sewage

House Drainage Regulations on the Continent. Frank R. Durham. Read before the Inst. of San. Engrs. Comments on the more interesting regulations. 4500 w. Surveyor—May 2, 1913. No. 42000 A. Some Structural Features of the Flint,

Some Structural Features of the Flint, Mich., Sewerage and Drainage System. Drawings and information from the plans and report. 1000 w. Engng & Con—May 14, 1918. No. 42090.

Sewerage and Drainage Improvements at Edmonton. Alexander Potter. Brief illustrated description of tunnel systems. 1200 w. Con Rec—April 30, 1918. No.

42069.

Permissible Dilution of Sewage. George W. Fuller. Considers the hygienic aspects of sewage disposal and that dilution is permissible provided complications can be prevented as far as disease germs are concerned. Discussion. 8000 w. Jour W Soc of Engrs—May, 1913. No. 42924 D.

Some Observations on the Formation of Hydrogen Sulphide in Sewage. Dr. Arthur Lederer. Read before the San. Engng Sec. of the Pub. Health Assn. Considers the formation of hydrogen sulphide in its relation to inorganic or organic sulphur compounds. 4000 w. Chem Engr—Aug., 1918. No. 44803 C.

Measuring the Sewage of Sacramento. The Variation in pressure on the convex and concave sides of pipe elbows furnished a means of rating the discharge. 1500 w. Eng Rec—Aug. 16, 1913. No. 44432.

Method of Distributing Sewage on Bacteria Beds. From a paper by U. W. Adams. The bacterial system adopted at Fenton, Eng., is illustrated and described. 1800 w. Con Rec—Sept. 3, 1913. No. 44935.

Fresh Sludge and Decomposed Sludge. Hermann Bach and Leslie C. Frank. Comparative analyses and discussion of sludge utilization possibilities. 4000 w. Eng Rec—Sept. 20, 1913. No. 45271.

Standards with Reference to Sewage Treatment. T. Aird Murray. Read before the Can. Pub. Health Assn. Discusses the disinfection of sewage effuents, with special reference to Canadian conditions. 3000 w. Con Rec.—Sept. 24, 1913. No. 45451.

The Bacterial Clarification of Sewage. Gilbert J. Fowler and E. Moore Mumford. From a paper read before the Ry. San. Inst. Explains a proposed process. 1800 w. Surveyor—Aug. 22, 1913. No. 44911 A.

Sewage Disinfection in Philadelphia. W. L. Stevenson. Illustrates and describes details of apparatus for treating effluent of Pennypack Creek Works. 1500 w. Eng Rec.—Sept. 6, 1918. No. 44992.

Sewage Purification at Atlanta, Ga. Gives results of tests conducted over a period of six months on the largest installation of Imhoff tanks in America. Ills. 2500 w. Munic Engng—Sept., 1918. No. 45209 C.

Sewage Disposal

Operating Results of Imhoff Sewage Tank. Fred H. Tibbetts. Abstract of a paper before the League of Calif. Munic. Describes the structural features of the tank at Winters, Cal., and gives operating results. 2000 w. Can Engr—Oct. 31, 1912. No. 87265.

A Study of the Economic Limits of Sewage Treatment with Special Reference to Imhoff Tanks and Their Use. Henry H. Ogden. From a paper read before the Am. Soc. of Munic. Imp. Discusses the economic limits of sewage treatment, and the essential features of the Imhoff tank process. 2500 w. Enging & Con—Nov. 27, 1912. No. 37925.

Imhoff Tanks. Abstract of a paper by Prof. Ogden, read before the Dallas Convention of the Am. Soc. of Munic. Insp. Explains the principles of their design. Ills. 2500 w. Munic Engag—

May, 1913. No. 42413 C.

Design of Imhoff Sewage Plants.
Leslie C. Frank and Franz Fries. First of three articles. Discusses the selection of preliminary screens and proportioning of grit chambers. Ills. 2500 w. Eng Rec—Oct. 25, 1913. Serial. 1st part. No. 46207.

British Practice in Sewage Disposal. Arthur J. Martin. Read at the Berlin Cong. of the Roy. Inst. of Pub. Health. History of the sewage problem with description of present practice. 5000 w. Eng Rec—Nov. 2, 1912. No. 37226.

Bradford Sewage Disposal Works. Illustrated account of a very extensive scheme for the treatment of sewage, which will eventually cost 1½ millions sterling. 1800 w. Engr, Lond—Nov. 8, 1912. No. 37646 A.

Utilization of Humus from Slate Beds. From a paper by W. J. Dibdin on "The Slate Bed Treatment of Sewage." Discussion. 3500 w. Surveyor—Dec. 6, 1912 No. 38240 A.

Sewage Disposal

The Effect of Hydrogen Sulphids on the Concrete of Sewage Disposal Plants. William M. Barr and R. E. Buchanan. From Bul. Iowa State Col. of Agri. and Mech. Arts. Gives results of observations of plants and of tests. 3000 w. Eng News—Dec. 12, 1912. No. 38179.

Imhoff Tanks and Sprinkling Filters for Sewage Treatment at the Fulton County Almshouse, Georgia. P. H. Norcross. Drawings and description of the sewage treatment works. 600 w. Eng News—Dec. 26, 1912. No. 38596.

Lethbridge Sewage Disposal Works. T. Aird Murray. Illustrates and describes a plant in Alberta, Canada, for producing an effluent to be disinfected at minimum cost. 2000 w. Eng Rec—Dec. 14, 1912. No. 38198.

General Principles Governing the Discharge of Sewage and Waste Matters into Certain Groupings of Natural Bodies of Water Gives report of the committee appointed by the Nat. Assn. for Preventing the Pollution of Rivers and Waterways. 1200 w. Engng & Con—Dec. 25, 1912. No. 38553.

Sewage Disposal. J. Darlington Whitmore. Read before the Regina Engng. Soc. Deals with water borne sewage only, tracing an imaginary scheme from the household to the reception and treatment at the disposal works. 4500 w. Can Engr—Jan. 9, 1913. No. 38963.

Disinfection of Sewage and Sewage Filter Effluent. Reports results of experiments by Massachusetts State Board of Health. 4500 w. Eng Rec—Jan. 4, 1913. No. 38802.

Tanks. Arthur J. Martin. Discusses questions in connection with the tank treatment of sewage. Discussion. 3000 w. Surveyor—Dec. 20, 1913. No. 38875 A.

Sludge Disposal at Bradford. Illustrated description of a large scheme for the treatment of sewage. 1700 w. Surveyor—Jan. 3, 1913. No. 39146 A.

Operating Results of the Sewage Disposal Works at Bordentown, New Jersey. C. M. Hartley. Brief illustrated description of the plant, with report of the operating results. 2500 w. Engng & Con—Jan. 1, 1913. No. 38772.

Facts and Fancies About Sewage Disposal. Gilbert Thomson. Abstract of a lecture before the San. Assn. of Scotland. Discusses some of the systems and the complications. 5800 w. Can Engr—Feb. 20, 1913. No. 39972.

Sewage Disposal Investigations at Cleveland. R. Winthrop Pratt. Explains causes for making the tests before building proposed works, and describes the

testing station. Ills. 5000 w. Eng News —Feb. 13, 1913. No. 39857.

Sewage-Disposal Plant at the Great Lakes Naval Training Station. Illustrated description of a plant treating sewage by reduction tanks and anaërobic and sprinkling filters. 1200 w. Eng Rec March 1, 1913. No. 40260.

The Design and Operating of the Institutional Sewage Treatment Plant at Julietta, Indiana. Charles Brossman. Read before the Indiana San. & Water Sup. Assn. Illustrates and describes the design and operation of the plant. 1600 w. Engng & Con—Feb. 26, 1913. No. 40232.

Julietta Sewage Disposal Plant. Charles Brossmann. Brief illustrated description of the first purification plant in Indiana to use the Imhoff tank. 1000 w. Munic Jour. Jan 9 1913 No. 38921

to use the Imhoff tank. 1000 w. Munic Jour—Jan. 9, 1913. No. 38921.

Sewage Treatment-Plant for the Julietta Insane Hospital, Indiana. Charles Brossman. Illustrated description of a plant consisting of a modified Imhoff tank, contact beds, and sand filters. 1000 w. Eng News—May 1, 1913. No. 41863.

A New Type of Sewage Sedimentation Tank, Mount Washington, Md. Howard T. Oliver. Illustrated description of the plant and its operation. 2500 w. Eng News—April 10, 1913. No. 41163.

Sewage Treatment at Norristown, Pennsylvania. P. E. Mebus. Illustrates

Sewage Treatment at Norristown, Pennsylvania. P. E. Mebus. Illustrates and describes the plant at the State Hospital for Insane, having 3,500 inmates. 1500 w. Munic Jour—April 24, 1913. No. 41548.

Sewage-Treatment Studies at Akron, Ohio. Reports results of experiments with settling tanks and filters of several types. Ills. 3500 w. Eng Rec—April 5, 1913. No. 41123.

The Sewage Treatment at Atlanta, Ga. W. A. Hansell, Jr. Illustrates and describes the system adopted and treatment, giving results of chemical and bacteriological analysis. 3500 w. Munic Jour—April 3, 1913. No. 41086.

Plans for the Disposal of New York's Sewage. Illustrates and describes a proposed treatment plant on an artificial island three miles offshore. 2000 w. Sci

island three miles offshore. 2000 w. Sci Am—May 31, 1913. No. 42522. Inoffensive Collection and Disposal of Sewage. Rudolph Hering. Brief discussion of methods and results. Ills. 3800 w. Con Rec—April 30, 1913. No. 42067.

Sewage Treatment. R. J. McKenn. Read before the Inst. of Munic. Engrs. Describes the various parts of sewage works, commencing with the detritus tanks and concluding with the methods of treating sewage. 2500 w. Surveyor—

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May 9, 1913. Serial. 1st part. No. 42280 A

The Design of the Sewage Treatment-Plant at Albia, Iowa. M. G. Hall. Explains conditions and gives an illustrated detailed description of plant. 1500 w. Engng & Con—April 30, 1913. No. 41821.

Sewage Purification. F. H. Tibbetts. Illustrated description of works at Winters, Cal., and the operating results. 2500 w. Munic Engng—June, 1913. No. 43179 C.

Sewage Treatment Works for Fitchburg, Mass. Frank A. Marston. Plans and details of works about to be built, including Imhoff tanks, sludge beds,

including Imhoff tanks, sludge beds, sprinkling filters and secondary or final settling tanks. 3000 w. Eng News—June 5, 1913. No. 42700.

Structural Features of the Sewage Treatment Works for Fitchburg, Mass. Illustrates and describes the principal novel features in the design of the sewage treatment works. age treatment works. 3000 w. Engng & Con—June 25, 1913. No. 43196.

The Operation of Sewage Disposal Plant at Columbus, O. Illustrated detailed description of the sewage treatment. 2500 w. Munic Engng — June, 1913. No. 43176 C.

The Skilled Supervision of Sewage Purification Works. F. Herbert Snow. An argument in favor of compulsory adequate supervision under state regulation, and the necessity therefor. Discussion. 5500 w. Am Jour Pub Health-June, 1913. No. 43599 C.

The Sludge Problem. Langdon Pearse. Relation of sludge deposits from standpoints of nuisance and hydraulics, to its cures-by dredging, diversion or prevention. 2800 w. Am Jour Pub Health— June, 1913. No. 44002 C.

The Treatment of Sewage Discharged into Tidal Waters. H. C. H. Shenton. Read before the Assn. of Mgrs. of Sew-age Disposal Works. A discussion of the degree necessary to purify sewage before discharging into tidal waters. 3500 w. Surveyor—July 4, 1913. No. 43710 A.

Distribution of Sewage on Bacteria Beds. Ulric W. Adams. Illustrates and describes methods adopted at Stoke-on-Trent. 1800 w. Surveyor-Aug. 1, 1913. No. 44313 A.

Sewage Disposal at New Bedford, Walter N. Charles. Illustrates Mass. and describes the intercepting and outfall sewers under construction. 2000 w. Eng News-July 31, 1913. No. 44113.

Sewage Disposal of the Future. W. H. Makepeace. From a paper read before the Assn. of Mgrs. of Sewage Disposal

Surveyor-July 25, Works. 2000 w. 1913. No. 44172 A.

The Design of the New Sewage Treatment Plant for Madison, Wis. Describes this plant now under construction, particularly the sewage tanks and dosing tanks. Ills. 4500 w. Engng & Con—Aug. 20, 1913. No. 44495.

Shell Fish and Sewage Disposal. George A. Johnson. Discusses the reality of menace to health in shell fish as food. 1500 w. Munic Jour—Sept. 11, 1913. No. 45122.

The Development of Sewage Disposal Practice. E. Sherman Chase. Read before the Ont. Munic. Assn. Historical review of the scientific disposal of waste. 3500 w. Can Engr-Sept. 11, 1913. No. 45123.

Sewage Disposal at Stratford-on-Avon. Herbert D. Bell. Extracts from the last annual report. Information concerning sludge disposal, research work and related matters. 2200 w. Surveyor—Sept. 5, 1913. No. 45147 A.

Sewage Treatment Plant for a Sana-P. H. Norcross. Illustrated description of a plant near Louisville, Ky., for treatment of wastes from a hospital. 1200 w. Eng News-Sept. 18, 1913. No. 45225.

A Review of Good Practice in Sewage Collection and Disposal. Abstract of a progress report made to the Am. Pub. Health Assn. summarizing the best present practice. 3500 w. Engng & Con—Oct. 15 1913. No. 45891.

Royal Commission on Sewage Disposal. H. C. H. Shenton and W. C. Easdale. Extract from the appendix to the eighth report, with notes. 9000 w. Surveyor— Oct. 17, 1913. Serial. 1st part. No. 46230 A.

Obligations of the State to a Municipality Which Has Been Ordered to Dispose of Its Sewage Properly by the State Board of Health. Chester G. Wigley. Read before the Am. Soc. of Munic. Imp. Questions related to the subject are fully discussed. 3000 w. Engng & Con—Oct. 29, 1913. No. 46386.

Distribution of Sewage Sludge in Settling Tanks. Charles Hoopes. Explains the problem and its solution. 1500 w. Eng Rec—Oct. 18, 1913. No. 45940.

The Clarification of Sewage in Slate Beds. Dr. Bach. Trans. from Technisches Gerneindeblatt. A description of the construction and operation of slate beds with data concerning their efficiency, limitations and cost. Ills. 4000 w. Eng. News—Oct. 2, 1913. No. 45648.

Travelers for Sewage Distribution. Abstract of paper by Alexander Potter,

Sewerage

read before the Am. Soc. of Munic. Imp. Illustrated description of the powerdriven traveling distributor at the plant in Springfield, Mo. 2200 w. Eng Rec— Oct. 18, 1913. No. 45943.

Notes on the Sewerage and Sewage Disposal Works and the Mineral Waters and Treatments of Harrogate. C. E. Rivers. Read before the Munic. & Co. Engrs. 5000 w Surveyor—Oct. 10, 1913. No. 45976 A.

Examination of River Bottoms at Philadelphia in Connection with Sewage Disposal Studies—Methods and Results. W. L. Stevenson. Read before the Am. Health Assn. Describes these s. 2000 w. Engng & Con—Oct. studies. 29, 1913. No. 46387.

Springfield Sewage Disposal Plant and Its Departure from Common Practice. Alexander Potter. Illustrated detailed description of plant at Springfield, Mo., using power-driven traveling distribu-tors. 3500 w. Con Rec—Oct. 22, 1913. No. 46151.

Tiverton Sewage Disposal Works. L. D. Holgate. Read before the Inst. of Munic. & Co., Engrs. Describes treatment adopted to overcome offensive odors in the vicinity of the sewage farm. 1800 w. Surveyor—Oct. 3, 1913. No. 45849 A.

Cheitenham Sewage Purification Works. J. S. Pickering. Drawings and description. 2200 w. Surveyor—Oct. 10, 1913. No. 45977 A.

Sewage Filters

Fine Grade Filters, Their Use and Limits. W. H. Makepeace. Read before the Assn. of Mgrs. of Sewage Disposal Thinks with proper attention to the preliminary treatment of the sewage and a reliable distributor, this type is superior to any other. Ills. 1200 w. Surveyor—Jan. 3, 1913. No. 39147 A.

Sewage Flow Daily Fluctuation in Sewage Flows. William Fairley. Gives curves selected from a number of actual gaugings of the rate of discharge. 1500 w. Inst of Civ Engrs—No. 4008. No. 39298 N.

Sewage Pumping

New Sewage Pumping Station in Detroit. Illustrated description of plant for pumping, the storm water and domestic sewage into the Detroit River. 2000 w. Eng Rec—Dec. 21, 1912. No. 38323. Some Notes on Modern Sewage Pump-

ing Machinery and Appliances with Illustractive Examples. Illustrates and describes types and installations now in service. 1800 w. Engng & Con-Jan. 29, 1913. No. 39583.

The London County Council's New Sewage Pumping Station. Illustrated description of the Abbey Mills new sewage pumping station, with information concerning it. 1500 w. Engr, Lond— July 18, 1913. No. 43975 A.

Sewage Purification

Sewage Purification. James Millar Neil. Illustrated description of the Chemproco sewage disposal system, explaining its advantages. 2500 w. Met & Chem Engng—Feb., 1913. No. 39682 C. Sewage Purification in the East. B.

Ball. Illustrates and describes conditions in Singapore, and gives information concerning the value of coral as a filtering material. 1000 w. Surveyor—Jan. 31, 1913. (Special.) No. 39785 N.

Lawrence Experiment station Studies of the Disinfection of Sewage and Effluents from Sewage Fillets. Information from the latest annual report. Describes experiments made. 6000 w. Engng & Con—Jan. 29, 1913. No. 39584.

Sewage Treatment

Sewage Treatment vs. Sewage Purification. George C. Whipple. Considers, first, the misuse of the latter term, and, second, the lack of advantage in absolute purification. Discussion. 6000 w. Am Jour Pub Health—June, 1913. No. 44000 C.

Sewage Treatment. R. J. McKenn. Read at a District meeting of the Inst. of Munic. Engrs. Deals with the general constructional part of the works, tank treatment, percolating beds, sludge treatment, &c. 4500 w. Plumb & Dec—Aug. 1, 1913. No. 44303 A.

Cincinnati Sewerage Investigations and Surveys. J. E. Root. Gives a brief outline of investigations of present conditions and surveys for future sewerage planning being carried out by the city. 2000 w. Eng Rec—March 29, 1913. No. 40958.

The Covering of Jones' Falls, Baltimore, Md. Illustrated description of the covering of an open creek, as a part of a new sewage construction. The cover will be used as a low-grade street, connecting railway stations and the wharves. 4000 w. Eng News-July 3, 1913. No. 43433.

The Design and Construction of the Jones Falls Stream Improvement, Balti-more, Md. J. J. Frederick. Illustrated description of this work, now nearing completion. 1200 w. Engng & Con— July 9, 1913. No. 43614. Rhymney Valley Sewerage.

Give details of a £222,000 scheme. 1500 w. veyor—July 18, 1913. No. 43956 A.

Some Observations on the Formation of Hydrogen Sulphide in Sewage. Arthur Lederer. Studies on the liberation Sewer Pipe

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of gases from decomposing sewage. 4700 w. Am Jour Pub Health-June, 1913. No. 44003 C.

Effect of Sewerage Upon Health. J. H. Kimball. Shows the relation between the growth of the sewerage system, number of buildings connected and the typhoid rate in Louisville, Ky. Also gives data from other cities. Ills. 2000 w. Munic Jour-Aug. 14, 1913. No. 44366. Sewer Pipe

See also Specifications, under Materials of Construction.

Sewers

Laying a Deep Sewer in Bad Ground. George Phelps. Describes a sewer in North Toronto laid at a depth of about 30 feet, the difficulties encountered and methods adopted. Ills. 2000 w. Can Engr.—Nov. 21, 1912. No. 37773. Laying Sewers in Water Bearing Ma-

terial. Charles Hoopes. Describes work at Batavia, N. Y., giving costs under these conditions. 2000 w. Eng Rec-Nov. 9. 1912. No. 87359.

Some Notes on the Design and Construction of Storm Water Sewers in Richmond, Va. Allen J. Saville. scribes conditions and explains problems solved in designing and constructing the sewers. Ills. 1000 w. Engng & Con -Nov. 20, 1912. No. 37703.

Design and Construction of the O. K. Creek Sewer, Kansas City, Missouri. Illustrated account of the diversion into a large concrete sewer of a stream meandering through the site of the new union passenger terminal. 2500 w. Eng Rec -Nov. 2, 1912. No. 87220.

Sewage Construction in Sydney, New South Wales. Illustrated account of a gravitation scheme for Western, Southern, Illawarra and Botany districts. 2500 w. Surveyor-Nov. 15, 1912. No. 37814 A.

The Use of Concrete in Sewers. comparison of designs of concrete sewers showing the tendencies and variations made to suit conditions. Ills. 1700 w. Munic Engng—Dec., 1912. No. 38646 C.

Method of Laying a 24-in. Pipe Sewer in 30-ft. Cut in Quicksand in Freezing Weather, at North Toronto, Ontario. George Phelps. Illustrates and describes methods employed. 2200 w. Engng & Con-Dec. 25, 1912. No. 88552.

Methods Employed in Laying the Submerged Sewer Outlet Pipe in Lake Ontario, at Rochester, N. Y. Illustrated description of this feature of the extensive work in progress. 1500 w. Engng & Con—Dec. 25, 1912. No. 38551.

Sewage of the City of Portland, Ore.
T. M. Hurlburt. Describes the natural

conditions, the pioneer sewer systems, and the present types of sewer construction and proposed work. Ills. 3000 w. Jour Assn of Engng Socs—Dec., 1912. 38652 C.

The Infiltration of Ground Water Into Sewers. John N. Brooks. Data on infiltration, suggesting rational units for the measurement of its quantity. 1500 w. Pro Am Soc of Civ Engrs—Dec., 1912. No. 39290 F.

Concrete Sewer Construction in Louis-ville, Ky. J. H. Kimball. Gives reasons for adopting concrete, and information concerning its wear, etc. Ills. 2000 w. Munic Engng—Jan., 1913. No. 39535 C.

Construction of a Concrete Sewer Tunnel Through Difficult Ground. H. S. Philips. Illustrated description of work in Toronto known as Barton Section 1, part of a system of storm overflow sewers. 2000 w. Can Engr-Jan. 16, 1913. No. 39380.

Intercepting New Bedford Sewer. Archibald A. Talmage. Describes an intercepting sewer which will cost about \$1,680,000, and have a capacity of 120,-000,000 gallons per day. Ills. 8000 w. Munic Jour—Jan. 2, 1913. No. 38785.

Louisville's \$5,000,000 Sewers. G. D. rain. Brief description of extensive Crain. sewer work now nearing completion. 2200 w. Mfrs' Rec—Feb. 6, 1913. No. 39663.

Rehabilitation of Hoboken Sewerage System. Illustrated description of a proposed gravity system on flat grades flushed automatically with tidewater. 2500 w. Eng Rec—Feb. 22, 1913. No. 40107.

Practical Hints on Sewer Construction. W. W. Brigden. Gives useful suggestions on trenching, jointing pipe and handling concrete work in cold weather. 3000 w. Eng Rec—March 1, 1913. No. 40264.

Difficult Sewer Construction at West Liberty, Iowa. Charles P. Chase. Read Before the Iowa Engng Soc. Describes unusual work, explaining conditions. Ills. 2000 w. Eng Rec—March 15, 1913. No. 40646.

The Infiltration of Ground Water Into Sewers. Discussion of the paper by John N. Brooks. 5500 w. Pro Am Soc of Civ Engrs—March, 1913. No. 41319 F.

The Infiltration of Ground-Water into Sewers. Continued discussion of the paper by John N. Brooks. 1000 w. Pro Am Soc of Civ Engrs-Sept., 1913. No. 45523 F.

Cost of Sewer Trenching with a Carson Machine at Moundsville, W. Va. A. W. Peters. A report of deep trench work,

1500 w. explaining conditions. Engng

& Con—April 2, 1913. No. 41025.
Construction Work on the Passaic Valley Sewer. Illustrates and describes the methods and apparatus used. 3000 Munic Jour—April 3, 1913. No. 41085. 3000 w.

Fairview Sewer and Pumping Station. A. L. Sears. Describes methods and appliances used in Detroit, Mich. Ills. 1800 w. Munic Jour - April 3, 1913. No. 41087.

Sewer Siphons Under New York Subway. Thad. L. Wilson. Explains conditions and describes the sewer work, reporting tests made. Ills. 2500 w. Munic Engng—May, 1913. No. 42412 C.

The Design of Siphon and Grit Chambers for the Main Intercepting Sewer, Fitchburg, Mass. Illustrates and describes two interesting structural features of the main interceptor. 1500 w. Engng & Con—May 28, 1913. No. 42519.

The Infiltration of Ground-Water into Sewers. Continued discussion of the paper by John N. Brooks. 1500 w. Pro Am Soc of Civ Engrs—May, 1918. No. 42914 F.

J. M. A Sewer Discharge Diagram. M. Greig. Gives diagram and formula

used with it, with explanation. 500 w. Can Engr—June 5, 1913. No. 42687.
Construction of Tile Pipe Sewers in Chicago. Herbert Edson Hudson. Information concerning the amount of brick and tile sewers in the city, with description of the construction. Ills. 2500 w. Munic Engag—July, 1912. No. 44085 C. Construction Methods Employed on the

Albany Ave. Sewer System in Chicago. Describes work on Troy street between 27th and 28th streets, in constructing a section of brick sewer 9 ft. in diameter. Engng & Con-Aug. 6, 1918. No. 44214.

New Sewage Works at Surbiton. Illustrated detailed description of the new works and information related. 4500 w. 1913. Engr, Lond—Aug. 8, No. **444**64 A.

Notes on Tunnelling for Sewers. M. M. Greig. Gives instances of difficult construction through unfavorable ground, describing methods used to cope with unstable soil, heavy surface traffic, &c. Ills. 2500 w. Can Engr—Aug. 7, 1913. No. 44278.

The Fitchburg, Mass., Intercepting Sewer. David A. Hartwell. Illustrated account of the design and construction. 3500 w. Jour Assn of Engng Soc-Aug., 1913. No. 44520 C.

The Intercepting Sewer System of Syracuse, N. Y. Glenn D. Holmes. Describes some of the more interesting

features. Ills. 1700 w. Journ Assn of Engng Socs-Aug., 1913. No. 44519 C.

Launching a Submerged Sewer Outfall at Ocean Grove. Marshall R. Pugh. Brief illustrated description. 1000 w.

Eng Rec.—Sept. 6, 1913. No. 45000.

Methods and Cost of Sanitary Sewer
Construction at Davenport, Ia. W.
S. Anderson. Describes construction methods and records costs. 3000 w. Engng & Con-Sept. 3, 1913. No. 44978.

Comparative Merits of Separate and Combined Sewers, with Special Reference to Requirements Imposed by Sewage Treatment. Extract from a paper by John H. Gregory, read before the Am. Soc. of Munic. Imp. 3500 w. Engng & Con—Oct. 15, 1913. No. 45890.

Greater Vancouver Joint Sewerage

Scheme. An account of the organizing and financing project for draining 55600 acres, with data on rainfall and float tests. Ills. 2500 w. Eng Rec—Oct. 25, 1913. No. 46211.

The Passaic Valley Sewer. Illustrates and describes some of the work in progress and the plans for securing wide dif-fusion at the outlet in New York bay. 1200 w. Sci Am—Oct. 25, 1913. No. 46136.

See also Sewerage Systems, and Storm Sewers, under Municipal.

Sewer Screens

Revolving Drum Screens for Sewage. Data compiled from articles in German technical periodicals by Kenneth Allen. Ills. 3000 w. Eng Rec-April 26, 1913. No. 41541.

Sewer Systems

The Design of and Methods and Cost of Construction, by Force Account and Piece Work, a Sewerage System for a Small Town. J. E. Tupper. Explains conditions at Pomeroy, Wash., describing the sewerage system, its construction, cost, etc. 7000 w. Engng & Con—March 12, 1913. No. 40454.

Smoke

How and Why Smoke Is Injurious. Raymond C. Brenner. Considers the nature and composition of soot, its effect on vegetation, buildings, materials, etc. 1800 w. Met & Chem Engng-Nov., 1912. No. 37253 C.

Industrial Research, With Especial Reference to the Problems of the Smoke Nuisance. Dr. Raymond F. Bacon. Outlines the method of research founded by Robert Kennedy Duncan, and some of the problems studied. 4000 w. Jour Worcester Poly Inst—Nov., 1912. No. 87883 C.

The Laws in Force in Europe Against the Emission of Black Smoke. John B. C. Kershaw. Reviews the legal position

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in regard to smoke abatement in Great Britain, and proposed amendments, also the state of the law in Paris, Germany and Austria. 3500 w. Met & Chem Engng—Nov., 1912. No. 37256 C. City Smoke Ordinances and Smoke

Abatement. Samuel B. Flagg. Information concerning the status of smoke abatement in the United States, and what are believed to be the better methods. 55 pp. U S Bureau of Mines—Bul. 49. No. pp. U S 38655 N.

Laboratory on Wheels. Hugh Pattison. Illustrates and describes a laboratory used in atmospheric tests by smoke abatement experts. 2000 w. Munic Engag— Dec., 1912. No. 38647 C.

City Smoke Ordinances and Smoke Abatement. Samuel B. Flagg. A study of the factors affecting smoke conditions in cities, smoke-abatement work in the United States, the function of a smoke ordinance, the enforcement, etc. 18500 w. U.S. Bureau of Mines—Bul. 49. No. 39507 N.

Why Smoke Is an Industrial Nuisance. R. C. Benner. Discusses what smoke

R. C. Benner. Discusses what smoke costs in damage to property, affect on vegetation and health, etc. 3500 w. Ir Age—Jan. 9, 1913. No. 38915 C.
Smoke and Dust Precipitation. Reviews experiments of Prof. W. W. Strong, of Pittsburgh University, and some of the more important conclusions. 3000 w. Elec Rev, Lond—Jan. 17, 1913. No. 39457 A

Smoke Abatement and Ordinances. Comparison of present conditions in principal cities of the United States. 3000 w.

Eng Rec—Feb. 8, 1913. No. 39728. Methods and Means of Smoke Abatement. O. R. McBride. Discusses the principal features of the smoke problem, showing that it can be solved. 4500 w. Pro Engrs' Club of Phila—Jan., 1913. No. 39959 D.

Atmospheric Pollution: A Standard Method of Measuring Its Amount and Character. John B. C. Kershaw. An unaracter. John B. C. Kershaw. An account of the steps taken to secure a standard method; methods that have been suggested or tried, with some preliminary results. 2800 w. Surveyor— March 14, 1913. No. 40814 A.

Regulating Smoke on River Steamboats Within City Limits. Reports investigations made by a committee at Cincinnati, and discusses the questions involved. 1500 Eng Rec - March 1, 1913. No. 40261.

A Curse of Civilization. Sir William Richmond. Read at conference on "Coal Smoke Abatement." Discusses the damages caused by smoke and the possibility

of its abatement. 3000 w. A.—Oct. 10, 1913. No. 45964 A. Archt, Lond

See also Smoke Prevention, under ME-CHANICAL ENGINEERING, Steam Engineer-

Storm Sewers

The Garrison Creek Storm Overflow Sewer in the City of Toronto. Ray R. Knight. Illustrates and describes the design of this relief sewer. 1200 w. Can Engr—March 20, 1913. No. 40781.

A Brief Discussion of Rainfall and Its Run-off into Sewers. Samuel A. Greeley. Deals with the determination of storm run-off for the computation of adequate sizes of sewers. 6000 w. Jour W Soc of Engrs—Sept, 1913. No. 46289 D.

Discussion of Papers by Messrs. Thon, Howson, and Greeley. 4800 w. Jour W Soc of Engrs—Sept, 1913. No. 46290 D.

Storm Water

Storm Water Discharge. R. O. Wynne-Roberts and T. Brockmann. First of a series of articles explaining the factors that affect this problem, and describing a more accurate method of calculation than that in use. 1500 w. Can Engr—Feb. 3, 1913. Serial, 1st part. No. Feb. 3, 1913. 39827.

Storm Water Discharge. R. O. Wynne-Roberts and T. Brockmann. First of a series of articles dealing in detail with the factors involved. 1000 w. Surveyor -March 28, 1913. Serial. 1st part. No. 41136 A.

Town Planning

The Principles to Be Observed in Designing and Laying Out Towns Treated from the Architectural Standpoint. T. Harold Hughes. An illustrated study of the circumstance of the control of th the aims and problems. 8800 w. Jour Roy Inst of Brit Archts—Dec. 7, 1912. Serial. 1st part. No. 39177 D.

Town Planning and Civic Improvement. C. H. Mitchell. Discusses the planning for circulation and transportation; for open spaces and parks; privately owned land, and land outside the city, giving recommendations. 6500 w. Can Engr-Dec. 26, 1912. No. 38688.

Town Planning. Christopher J. Yorath. Extract from a paper read at Convention of the Union of Can. Municipalities. Discusses the problem under eight heads. 3500 w. Can Engr-Aug. 28, 1913. No. 44868.

Legal Aspects of Town Planning. John L. Jack. Considers the subject in reference to Scotland. 4000 w. Surveyor-

Aug. 22, 1913. No. 44910 A.

The Birmingham Town Planning
Schemes and Notes on the Procedure
Regulations. Henry E. Stilgoe. Outlines

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ROADS AND PAVEMENTS

Asphalt

the various schemes. Also discussion. Ills. 6500 w. Surveyor-Aug. 29, 1913. No. 45034 A.

Scientific Methods for Constructing a Healthful Town (Les mêthodes scientifiques pour la construction des villes salubres). Aug. Rey. Views on orientation, industrial quarters, land speculation and habitation limits. 2000 w. Mem Soc Ing Civ de France-June, 1913. No. 45300 G.

See also Housing under Municipal.

Waste

The Collection and Disposal of Municipal Waste. G. H. Herrold. Discusses methods and plants of various cities. 4000 w. Jour Assn of Engng Soc—April, 1913. No. 41288 C.
Disposal of Paper Mill Wastes. Edward Hutchins. Gives a summary of the

wastes to be handled, their characteristics and principal methods of treatment. with brief description of a plant 8500 w. Jour Assn of Engng Socs-May, 1913. No. 42438 C.

ROADS AND PAVEMENTS

Accounting

Accounting System for Road Expenditures. W. W. Crosby. Gives the classification adopted by the Maryland Roads Commission. 2000 w. Eng Rec—Dec. 28, 1912. No. 38576.

Administration

Road Administration. W. A. McLean. Read before the Int. Road Cong. Considers the work as a business enterprise. 3000 w. Con Rec-Aug. 20, 1913. No. 44556.

Asphalt

History of Fifth Avenue Asphalt Pavement, New York. Clifford Richardson. Gives data showing that the modern type of sheet asphalt surface will stand traffic of the most trying sort. 2500 w. Eng Rec—Jan. 4, 1913. No. 38803.

Asphaltic Concrete and Sheet Asphalt

Pavements. Gives specifications adopted by Vancouver, B. C. 3500 w. Can Engr Feb. 20, 1913. No. 39973. Street and Railway Track Paving with Asphalt Block in a Suburban Town. Frank Chappell. Read before the Can. Soc. of Civ. Engrs. Explains conditions in the town of Oshawa and describes the construction of asphalt block pavement on

Feb. 20, 1913. No. 39971.

Asphalt Street Pavements. Ernest Worrall. Extracts from a paper read at a meeting of the Inst. of Munic. & Co. Engrs. at Stretford, Eng. Gives part of specifications and information concerning work in Stretford. 2800 w. Surveyor—March 14, 1913. No. 40815 A.
Paving in Salt Lake City. D. H. Blos-

som. Discusses the sheet asphalt pavement, the bitulithic and natural rock asphalt. Ills. 3500 w. Jour Assn of Engng Socs—March, 1913. No. 40433 C.

Tests on Compressed Asphalt Material (Esperienze sui materiali per asfalto compresso). L. Torri. Results of tests conducted at the Milan laboratory for

testing street materials. 3000 w. Monit • Tec—Jan. 20, 1913. No. 40616 D. How to Repair Asphalt Pavements. W. L. Hempelmann. Brief directions. Ills. 1000 w. Munic Engng—April, 1913. No. 41607 C.

Cost of Asphalt Repairs. Abstracts of reports of the operation of municipal plants for the repair of streets for 1912 in various cities. Ills. 2500 w. Munic Engng—May, 1913. No. 42411 C. Highway Construction with Paint

Binder and Its Sheet Asphalt Surface. Description, abstracted from an article by A. E. Loder, of a type of construction used in California. 1200 w. Engng & Con-May 28, 1913. No. 42514.

Maintenance of Asphalt Pavements.

Francis P. Smith. Discusses defects due

to wear and tear of traffic, deterioration of bituminous material, and defects in construction. Repairing by cutting out and by surface heating. 2500 w. Munic Jour—May 15, 1913. Serial. 1st part. No. 42085.

The Rock Asphalt Pavements of Lawton, Okla. Frank B. King. Gives the specifications and description of work. Ills. 2000 w. Engng & Con-April 30, 1913. No. 41818.

Method and Cost of Asphaltic-Macadam Construction on the Boulevard System of Kansas City, Mo. C. W. Redpath. Illustrated description of methods and results, with costs. 3500 w. Engng & Con—May 21, 1913. No. 42307.

A Rational Formula for Asphalt Street Surfaces. J. Alden Griffin. Gives a modification of the formula by the late Andrew Rosewater. Ills. 500 w. Pro Am Soc of Civ Engrs-Aug., 1913. No. 44782 F

Asphalt Paving Cements and Road Binders. J. W. Howard. States the necessary qualities and gives laboratory methods for determining them. 4500 w. Eng Rec—Sept. 27, 1913. No. 45476.

ROADS AND PAVEMENTS

Bituminous

See also Asphalt Plant, under Materials of Construction.

Asphalt Block

Street and Railway Track Paving with Asphalt Block in a Suburban Town. Frank Chappell. Illustrated description of work at Oshawa, Ontario. 2500 w. Can Soc of Civ Engrs—Feb. 6, 1913. No. 41709 N.

Asphaltic Concrete

Asphaltic Concrete as a Paving Material for Residence Streets, Suburban Districts and Boulevards. Linn White. Reviews briefly the principal varieties of street pavement used and gives information concerning the varieties of asphaltic concrete. 3500 w. Jour Assn of Engng Socs—June, 1913. No. 43246 C.

Asphaltic Concrete as a Paving Ma-Linn White. Considered especially with reference to residence streets, suburban districts and boulevards. 4500 w. Can Engr—Aug. 7, 1913. No. 44280.

Asphalt Plant

St. Louis Municipal Asphalt Plant. Harry M. Crutcher. Brief illustrated description of a plant used for repair and maintenance work only. 2000 w. Jour-Nov. 21 1912 No. 37767.

Municipal Asphalt Plants: Cost of Operation and Estimates for the Establishment of a Plant for the District of Columbia. From the report of David E. McComb, giving results of an investigation of the desirability and cost. 8000 w. Engng & Con — March 5, 1913. 40344.

Municipal Asphalt Plants of St. Louis, Mo. Description and costs of operation. 1800 w. Munic Engng-Oct, 1913. No. 46145 C.

Australasia

Australasian Road Problems. Coane. Paper for the Int. Road Cong. Explains conditions and the difficulties. 2000 w. Surveyor—Oct. 3, 1913. No. 2000 w. 45848 A.

Baltimore

The Paving Problem in Baltimore. L. J. Houston. An account of the methods and work of the Paving Commission for handling the improved paving situation. 3000 w. Cornell Civ Engr—Nov., 1912. No. 37538 C.

Belgian Block

An Oak-Keyed Belgian Block Pave-ment. Illustrated description of an invention by Edward Alcott for making use of old worn blocks in constructing a comparatively noiseless pavement. w. Eng News—Sept. 25, 1913. 900 45489.

Bends

Superelevation at Bends in Roads. Reginald Ryves. Discusses the limits of its

safe and useful employment. 2500 w. Surveyor-May 25, 1913. No. 42748 A. Bituminous

Some Causes of Failure in the Construction of Road Surfaces With Bituminous Materials. Abstract of Prof. Arthur H. Blanchard's paper before the Am. Road Cong. Explains the various methods of using bituminous materials discussing causes of failure due to conditions, materials, and construction. 2500 w. Engng & Con-Nov. 13, 1912. No. 37564.

Bitumin in Modern Pavements. J. B. Temple. Explains the nature and occurrence of bitumen, its applications to highways, etc. 3500 w. Ap Sci—Nov., 1912. Serial. 1st part. No. 38285 C.

Bituminous Materials: Their Use and Misuse. C. S. Reeves. Abstract of a pa-per read before the Mich. Engng. Soc. Considers the methods of application from the standpoint both of surface treatment and construction, pointing out some causes of failure. 2500 w. Engng & Con —Feb. 12, 1913. No. 39830. Fixed Carbon in Bituminous Materials:

Its Determination and Value in Specifications. Lester Kirschbraun. Read before the Am. Assn. for the Adv. of Science. Discussion showing in what particulars the fixed carbon test is of value. 4000 w. Engng & Con—Feb. 12, 1913. No. 39831.

The Consistency of Bituminous Material-Its Determination and Value in Specifications. W. W. Crosby. Read before the Am. Assn. for the Adv. of Science. A practical discussion of the significance and viscosity of bituminous materials for road work. 5000 w. Engng & Con—Feb. 5, 1913. No. 39696. Bituminous Gravel Concrete Pavements.

Information from a paper by Spencer J. Stewart, read before the Am. Assn. for the Adv. of Science. method of construction. Describes the Ills. 1500 w.

Engng & Con—Feb. 5, 1913. No. 39692.
Bituminous Gravel Concrete Pavements. J. W. Howard. Gives reasons for failures of such road surfaces. 1000 w. Munic Jour-June 19, 1913. No. 42967.

Bituminous Resurfacing by the Illinois Highway Commission in 1912. Date abstracted from a recently issued report showing the cost of resurfacing work. 3000 w. Engng & Con—June 4, 1913. No.

Modern Bituminous Roads and Pavements. F. C. Ford. Considers types of construction in which bituminous materials are used. 5000 w. Chem Engr-July, 1913. No. 43855 C.

Bituminous Surfaces and Bituminous Pavements. A. H. Blanchard. Read at

Concrete

the Int. Road Cong. Considers bituminous concrete pavements used in the United States during the past three years. 3000 w. Con Rec—Aug. 20, 1918. No. 44554.

Bituminous Pavements for City Streets. George W. Tillson. A discussion of the bituminous pavements considered standard to-day, their construction, mainten-ance and repair. General discussion. 10000 w. Pro Am Road Bldrs Assn-No. 46162 N. 1913.

Methods of Bituminous Construction. S. D. Foster. Read before the Am. Road Cong. Considers the penetration method as specified by the Pennsylvania State Highway Department. The selection of materials the governing factor. 2500 w. Con Rec—Oct. 8, 1913. No. 45792.

Brick

Will P. Blair. Brick Street Paving. Discusses the essentials involved in the most approved methods of constructing brick pavements, with special reference to Cleveland. O. 2500 w. Jour Cleve-land Engng Soc.—Nov., 1912. No. 37545 D.

Temperature Strains in Brick Pave-ments. James E. Howard. Describes Describes methods of investigations made by the U. S. Bureau of Standards, and gives results. Ills. 2000 w. Munic Engag—Dec., 1912. No. 38648 C.

Thermal Effects on Cement-Filled Brick Pavements. James G. Howard. Read at Dallas, before the Am. Soc. of Munic. Imp. Reports tests made under service conditions. Ills. 4500 w. Engng & Con—Nov. 27, 1912. No. 37921.

The Testing of Vitrified Paving Brick. W. P Bloecher. Reviews the tests so far devised, favoring the rattler test. 1200 Wis Engr-Nov., 1912. No. 38566 C.

Method and Cost of Brick Paved Country Road Construction in New York State. Illustrated description of methods employed, from a paper by William C. Perkins, read before the Am. Assn. for the Adv. of Science. 1500 w. Engng. & Con—Feb. 19, 1913. No. 39930.

Brick on Country Roads. William C. Perkins. Read before the Am. Assn. for the Adv. of Science. Illustrated report of the use of brick in the vicinity of Buffalo. 2500 w. Munic Engrig-Feb., 1913. No.

40098 C.

Prevention of Defects in Brick Pavements. Illustrated discussion of defects, the causes and prevention. 2500 w.

Munic Engng—Feb., 1913. No. 40097 C. Relative Advantages of Laying Brick Pavements on Sand Foundation and Cement Concrete Foundations. Abstract of a paper by Robert Hoffman, read before the Am. Assn. for the Adv. of

Science. Discusses the advantages as regards cost, maintenance and life. w. Engng & Con-Feb. 26, 1913. No. 40226.

Sand vs. Concrete Foundations for Brick Pavements. Robert Hoffman. Abstract of paper read before the Am. Assn. for the Adv. of Sci. Discusses the relative economy. Ills. 2500 w. Munic Jour & Engr — March 6, 1913. No. 40375.

Brick Pavements (Klinkerbestratingen). F. C. J. van den Steen van Ommeren. Studies on twelve brick sections, the tests applied, and directions for best results in laying, as practiced in Holland. Ills. 24,700 w. De Ingenieur—April 26, 1913. No. 42164 D.

Vitrified Brick as a Paving Material for Country Roads. Vernon M. Peirce and Charles H. Moorefield. Information relating to the construction of brick roads and suggestions for preparing specifications for satisfactory work. Ills. 34 pp. Bul U S Dept of Agri—No. 23. No. 45409 N.

Experiments in Brick Road Construction. James T. Voshell. Gives test data and costs of section containing fourteen

and costs of section containing fourteen varieties of paving brick. 1500 w. Eng Rec—Sept. 27, 1913. No. 45477.

Ohio Heavy Traffic Brick. Illustrates and describes the construction of high quality brick roads, and other kinds of pavement. 3500 w. Munic Jour—Sept. 25, 1913. No. 45485.

The Brick Roads of Cuyahoga Co., Ohio. James M. McCleary. Read before

Ohio. James M. McCleary. Read before the Am. Road Cong. Shows that success depends on care in details of construction. 3000 w. Eng News—Oct. 16, 1913. No. 45932.

See also Paving Tests, under Roads and ${\it Pavements.}$

By-Pass Roads. Reginald Ryves. discussion of the principles which should govern their alignment and construction. 3500 w. Surveyor-May 30, 1913. No. 42770 A.

California

California State Roads. S. J. Van Ornum. A critical discussion of the types of construction. Ills. 2500 w. W Engrg—July, 1913. No. 44048 C. S. J. Van

Concrete

The Construction of Concrete High-ays. Abstract of A. N. Johnson's paper, read before the Am. Road Cong. Discusses the mixture, aggregate, action under temperature, changes, expansion joints, and other features. 5000 w. Engng & Con—Nov. 13, 1912. No. 37562.

Concrete Highway Construction.

Concrete

N. Johnson. Read at Am. Road Cong. Detailed discussion of the characteristics of such roads and of methods of construction. 5500 w. Concrete-Cement-Age—Dec., 1912. No. 38154.

Concrete Construction of the Watertown Plank Road, Wisconsin. H. J. Kuelling. Drawings and description of the work. 1200 w. Eng News—Dec. 26, 1912.

No. 38587.

Brantford Concrete Pavements. T. Harry Jones. Illustrated detailed description of satisfactory concrete pavements. 1500 w. Can Engr—Dec. 5, 1912. No. 38088.

Concrete Pavement in Davenport and Vicinity. A. M. Compton. An account of the concrete pavements laid and the specifications used. 2000 w. Concrete-Cement Age—Dec., 1912. No. 38155.

Method and Cost of Constructing a Granitoid Pavement in Pierce County, Washington. C. H. Sweetser. Illustrated description of the work with itemized costs. 1800 w. Engng & Con—Feb. 5, 1913. No. 39691.

Riverbank Experimental Road. Illustrated description of construction methods, materials and tests of an experimental concrete road in California. 1200 w. Eng Rec.—March 8, 1913. No. 40367.

Concrete Roads. Edward N. Hines. Information concerning the construction and maintenance of concrete roads, giving results of comparative tests. Discussion. Ills. 13500 w. Jour W Soc of Engrs—March, 1913. No. 41270 D.

Concrete Pavements for City Streets and Country Roads. J. H. Chubb. Discusses the effect of motor traffic on roads and the advantages of concrete pavement for present day demands. 6500 w. Indiana Engng Soc—1912. No. 41733 N. The Concrete Roads of Wayne County.

The Concrete Roads of Wayne County. Edward M. Hines. Read before the Nat. Assn. of Cement Users. Discusses the good points in favor of this construction and gives interesting information. 3000 w. Cement—Dec. 1912. No. 41151 C.

w. Cement—Dec., 1912. No. 41151 C.
Asphaltic Concrete in Queens Borough.
Describes method of construction, using old macadam as foundation. Ills. 2500
w. Munic Jour—May 1, 1913. No. 41857.

Chevy Chase Experimental Concrete Road. Illustrates and describes bituminous, oil-cement and plain-cement concrete highway pavement laid near Washington, D. C. 2000 w. Eng Rec—June 28, 1913. No. 43304.

Concrete Pavement Construction. Presents a system of design to be used as a guide in determining a correct thickness. 3500 w. Munic Engrg—July, 1913. No. 44033 C.

Concrete Pavements and Correct Methods of Their Construction. S. T. Morse and W. D. P. Warren. Outlines correct methods of construction of concrete pavements. 3000 w. Engng & Con—July 9, 1913. No. 43607.

Plain Concrete Paving Used in Kansas City, Mo. Clark R. Mandigo. Describes the construction of these pavements and comments on the wear and utility. Ills. 3000 w. Eng News—July 17, 1913. No. 43838.

Winona County Concrete Roads. Describes the construction, in Minnesota, of 16 miles of 8-ft. concrete roads with macadam shoulders. Ills. 1500 w. Eng Rec—Aug. 9, 1913. No. 44242.

Bituminous Concrete Pavements. William B. Spencer. Considers types of mixed bituminous pavements and their construction. 4500 w. Jour Am Soc of Engng Con—June, 1913. No. 45163 C.

Hard Roads in Wayne County, Michigan. Illustrated account of the construction of eighty miles of concrete roads leading out of Detroit. 3000 w. Eng Rec—Sept. 27, 1913. No. 45475.

Some New York State Concrete Roads.

Some New York State Concrete Roads. Notes on completed and uncompleted work. Ills. 2500 w. Concrete-Cement Age—Sept., 1913. No. 45249.

A Report on the Use of Concrete as a Paving Material. Report of an investigation of the service given by concrete pavements. Also editorial. 7500 w. Engng & Con—Oct. 1, 1913. No. 45623.

Concrete as a Road Material. E. S.

Concrete as a Road Material. E. S. Hanson. Introductory chapter of a new volume on "Concrete Roads and Pavements." Discusses the qualities of a good roadway and the advantages of concrete. 3500 w. Cement Era—Oct., 1913. No. 45874.

Service Records of Concrete Pavement with Critical Suggestions for Obtaining Improved Service. Abstract of paper by F. F. Rogers, and discussion, before the Am. Road Cong. An official service study of the concrete roads in Wayne Co., Mich. 6000 w. Engng & Con—Oct. 22, 1913. No. 46128.

Concrete Roads Near Philadelphia. George D. Steele. Illustrates and describes the construction of these roads and gives specifications. 3500 w. Cement Era—Oct., 1913. No. 45875.

The Concrete Roads of Wayne County,

The Concrete Roads of Wayne County, Mich. Frank F. Rogers. Read before the Am. Road Cong. Gives traffic records and discussion of defects appearing, and other information relating to these roads. 3500 w. Eng News—Oct. 9, 1913. No. 45802.

See also Paving Tests, under Roads and Pavements.

Driveways

Concrete Costs

Methods and Labor Costs of Concrete Pavement Construction at Davenport, Ia., by Hand Mixing and by Machine Mixing. W. S. Anderson. Describes pavement laid by contract during the summer of 1911 and 1912. 3800 w. Engng & Con— Dec. 25, 1912. No. 38549.

Construction

Road Construction. E. A. Kingsley. From an address before the State Good Roads Assn., Little Rock, Ark. Discusses details of construction and location. 2000 w. Mfrs Rec—Feb. 6, 1913. No. 39664. Road Construction. From W. A. Mc-

Road Construction. From W. A. Mc-Lean's report to the government concerning the roads of Ontario. 3500 w. Can Engr—March 20, 1913. No. 40782. Earth and Gravel Roads. Robert C.

Earth and Gravel Roads. Robert C. Terrell. From a paper read before the Am. Road Bldrs. Assn. Discusses the importance of good drainage and proper location, crowning, etc. 2000 w. Can Engr—March 13, 1913. No. 40679.

Road Construction and Maintenance from the Standpoint of the Motor User. Richard W. R. Twelvetrees. Comments on features characterizing highways, such as approaches to towns and villages, sharp bends and concealed turnings, super-elevation at curves, etc. Ills. 3500 w. Surveyor — March 28, 1913. No. 41137 A.

The Making of Good Roads. W. B. Dunbar. The advantages of good roads are discussed and features of construction, materials, and earth, gravel, and macadam roads. Ills. 5500 w. Ap Sci—April, 1913. No. 42359 C.

The Trend of Modern Road Construction. From a paper by Col. Crompton and Mr. Boulnois read before the Roads Imp. Assn., London. Discusses wheel midths, interstitial wear, the ideal road, etc. General discussion. 4000 w. Surveyor, June 27, 1913. No. 43633 A.

Road Construction and Maintenance—Present and Future. Hector F. Gullan. Read before the Inst. of Munic. & Co. Engrs. Discusses the road surfaces most generally used, road construction, paving, &c., giving statistics. Discussion. 5500 w. Surveyor—July 25, 1913. No. 44174 A.

Road Construction and Maintenance Under Modern Traffic. W. J. Hadfield. Read before the Inst. of Munic. & Co. Engrs. Considers various kinds of pavement and the behavior under heavy traffic. Also discussion. 8000 w. Surveyor—Aug. 1, 1913. No. 44812 A. Road Construction and Maintenance.

Road Construction and Maintenance. An informal discussion at meeting held June 17 and 18, 1913. Ills. 30500 w. Pro Am Soc of Civ Engrs—Sept., 1913. No. 45529 F.

Street and Pavement Construction. A. F. Macallum. Considers various pavements in use and their characteristics. 3500 w. Can Engr—Sept. 4, 1915. No. 44959.

The Problem of Economic Road Construction. Editorial discussion of road construction and maintenance and what can be done to improve conditions and lessen cost. 4000 w. Eng News—Sept. 25, 1918. No. 45490.

The Economics of Highway Construction. Clifford Richardson. Considers the manner of financing road construction. Discussion. 5000 w. Pro Am Road Bldrs Assn—1913. No. 46171 N.

The Contractor's Point of View. Hugh Murphy. Explains some of the problems that cause friction and trouble and gives suggestions. General discussion. 10800 Pro Am Road Bldrs Assn—1913. No. 46166 N.

See also Road Models and Surfacing, under Roads and Pavements.

Contract Law

Legal Suggestions of Importance to Road Contractors. Abstract of a paper by William L. Bowman, read before the Third Am. Road Cong. Discusses important phases of contract law and rules to be heeded. 5500 w. Engng & Con—Oct. 15, 1913. No. 45887.

Contracts

Problems of a Highway Contractor. Hugh Murphy. Read before the Am. Road Blds. Assn., at Cincinnati, O. Discusses the causes of friction between contractors and officials, and the remedies. 3500 w. Eng Rec—Dec. 21, 1912. No. 38325.

Convict Labor

Convict Labor in Highway Construction. From a paper by Joseph Hyde Pratt, read at London meeting of the Int. Road Cong. Observations on the use of this class of labor. 2500 w. Engng & Con—July 9, 1913. No. 43608.

Culverts

See same heading, under Bridges.

Cute

Cuts in Newly Paved Streets. James E. Barlow. Considers preventive measures and the proper control and restoration of necessary openings. General discussion. 2200 w. Pro Am Road Bldrs Assn—1913. No. 46164 N.

Driveways

Park Drives and Boulevards. Linn White. Deals particularly with Chicago driveways. Ills. 2200 w. Munic Engng—Feb., 1913. No. 40096 C.

Dust Prevention

ROADS AND PAVEMENTS

Flood Effects

Dust Prevention

Progress Report of Experiments in Dust Prevention and Road Preservation, 1911. Gives details of methods pursued, with cost data and analyses of the materials used. 13800 w. U S Dept of Agri, Circ. 98—Dec. 12, 1912. No. 39508 N. Dust Prevention in St. Paul. G. H. Describes methods of sprinkling and oiling streets. giving cost, etc. 2500 w. Munic Jour—Jan. 2, 1913. No.

38786. Progress Reports of Experiments in Dust Prevention and Road Preservation, 1912. Annual review prepared by the Office of Public Roads. 51 pp. U. S. Dept. of Agri—Circ. 99. No. 43618 N. Experimental Work in Dust Preven-

tion and Road Preservation in 1912 by the U.S. Office of Public Roads. Description of experimental work, taken from a recently issued circular. 8500 w. Engrg & Con—July 30, 1913. No. 44049.

Sprinkling and Oiling Streets, St. Paul, Minn.; Organization, Methods, Cost, and Method of Assessing Cost. Based on the 1912 annual report of the Commissioner of Public Works. 3000 w. Eng News-Aug. 14, 1913. No. 44371.

Earth Roads

Unsurfaced Roads. W. S. Keller. Read before the Detroit Road Cong. Discusses unsurfaced roads under three classes, their construction and maintenance. 1700 w. Mfrs' Rec—Oct. 2, 1913. No. 45622.

Education

Highway Engineering Education. W. Crosby. Critical discussion of defects observed in the education of engineering employees. 2800 w. Bul Soc for Pro of Engng Ed-May, 1913. No. 44825 N.

Engineering

Permanent Roads an Economic Neces-Harry Wilkin Perry. Discusses waste due to poor road engineering, and the results of good practice. Ills. 2500 w. Sci Am Sup—Sept. 13, 1913. No. 45064.

Equipment

Plant Equipment for Road Construction F. E. Ellis. Discussion of the question of plant equipment from the standpoint of a road contractor, pointing out the importance of making proper plant changes. 2200 w. Engng & Con—Dec. No. 38144. 11, 1912.

Plant Equipment. F. E. Ellis. Information concerning the kind and amount of equipment required for different classes of roads given from the writer's 3000 w. Pro Am Road experience.

Bldrs Assn-1913. No. 46167 N.

Earth and Gravel Roads. Robert C. Terrell. Drainage and its importance is considered, the proper location of roads, construction, maintenance and related topics. General discussion. 4500 w. Pro Am Road Bldrs Assn—1913. No. 46169 N.

Europe's Good Roads. Francis Miltoun. Illustrated review of the best road engineering practice of Europe. 3000 w. Sci Am—Jan. 11, 1913. No. 39103.

The Highways of Europe. Arthur H. Blanchard. Discusses their administration, construction and maintenance. Ills. 4000 w. Con 'Rec-April 30, 1913. No. 42070.

European Paving

Observations on European Paving Methods and Materials. Extracts from a paper by E. H. Thomas, giving information collected during a recent trip of inspection of roads and pavements in several countries. 3500 w. Engng & Con—Oct. 29, 1918. No. 46383.

European Roads
European Road Building. Clarence A.
Kenyon. Information on the construction and maintenance of European roads. 2000 w. Munic Engng-Aug., 1913. No. 44390 C.

Excavation

Paving Earthwork Computations. F. C. Snow. Gives diagrams used for computing volume of excavation for street paving, using various forms of field notes. 1000 w. Munic Jour—June 19, 1913. No. 42968.

Experimental Pavements

Service Test of Street Pavements Under City Traffic. Report concerning experimental pavements laid on Second Ave., New York City. 2000 w. Engng & Con—Feb. 19, 1913. No. 39931.

Experimental Roads

United States Government Experimental Road. Gives construction notes and cost data on concrete road work at Chevy Chase, Md. Ills. 3300 w. Concrete-Cement Age—Sept., 1913. No. 45248.

Chevy Chase Experimental Road. Illustrated account of this government built road of different materials laid in various ways. Deals especially with the concrete construction. 1800 w. Cement Era—Oct, 1913. No. 45873.

Flood Effects

Effects of Flood on Pavements and Sewers. Gaylord C. Cummin. Notes on the damage and repair of municipal works at Dayton. Ills. 1500 w. Eng Rec-Sept. 27, 1913. No. 45479.

ROADS AND PAVEMENTS

Inspection

France

Authorities in Charge of the Construction and Maintenance of the Highway System of France. Describes the organization having charge. Abstracted from report of E. Marion, presented at the Third Int. Road Cong. 3500 w. Engng & Con-Sept. 10, 1913. No. 45059.

The Management of Roads in Germany. Gives an account of administrative arrangements in certain provinces; and developments from 1905-1910. 2800 Surveyor—Feb. 21, 1913. No. 40311 A. 2800 w.

Good Roads

Good Roads. Addresses by Hon. Henry W. Kiel and by Hon. John M. Chamber-lin. 4500 w. Pro St. Louis Ry Club— Sept. 12, 1913. No. 46103.

Grades

Grade and Surface Required on Roads. Reports tests made with a traction dynamometer wagon. 2000 w. Munic Engng

Jan., 1913. No. 39536 C. See Traction, under Roads and Pave-

ments.

Granite Block

Small Granite-Block Pavement Navy Yard at Brooklyn. Illustrated description of the construction of a pavement similar to the Durax block pavement of England. 1200 w. Eng Rec-Aug. 16, 1913. No. 44428.

Highways

Maintenance and Repair of New York State Highways in 1911, and a Progress Report on Experimental Work. Notes on the work done by the Bureau of Maintenance and Repair during the year 1911. 2500 w. Engng & Con—Nov. 20, 1912. No. 37701.

Revelations Concerning New York State Highway Work. Editorial criticism of the work, and review of statement made by C. Gordon Reel, and Gov. Sulzer's re-marks. 3500 w. Eng News—Jan. 9, 1913. No. 38951.

New York State Highway Work. Dematerials, appliances scribes methods used in various districts. Munic Jour-Sept. 25, 1913. 3000 w. No. 45484.

Highways of New York State. George A. Ricker. Discusses the legal, financial and engineering considerations in expending the \$100,000,000 voted for road build-2500 w. Eng Rec-Oct. 4, 1913. ing.

County and Town Organization of Highway work. A. N. Johnson. Abstract of a paper before the Am. Road Bldrs. Outlines the duties of the commission, the working force, road machinery,

construction work, maintenance, etc. 2000 w. Eng News—Jan. 9, 1913. No. 38946. King Edward VII Highway. H. S. Van Scoyoe. Detailed description of the methods used in constructing the concrete portion of this highway which extends from Montreal, Que., to Rouse's Point, N. Y. 1000 w. Can Engr—Jan. 23, 1913. No. 39409.

Highway Administration in the United

Highway Administration in the United States. Explains the systems in operation in the different states. 4000 w. Surveyor—Feb. 28, 1913. Serial, 1st part.

No. 40475 A.

State Highways. A. E. Robinson. Compares administration methods of construction of highways in Idaho with methods in older States. 2500 w. Jour of Idaho Soc of Engrs—June, 1912. No. 41724 N.

Work of the Philadelphia Bureau of Highways. Portions of the annual report dealing with reorganization of staff and progress. Ills. 2500 w. Eng Rec-June 7, 1913. No. 42712.

Constituent Principles of Highway aintenance. Analytical discussion, by Maintenance.

Maintenance. Analytical discussion, by Dr. L. I. Hewes, of the economics of highway administration. 3000 w. Eng Rec.—July 19, 1913. No. 43790.

I. Organization of a State Highway Department. W. W. Crosby. II. The Organization of a Highway Department for a Large City. William H. Connell. III. County and Township Organization of Highway Work. A. N. Johnson. Three papers discussed together. 19500 w. Pro Am Road Bldrs Assn.—1913. No. w. Pro Am Road Bldrs Assn-1913. No.

The Development of a Plan for a State Road System. James R. Marker. Reviews briefly the various eras of highway travel in the United States, discussing particularly conditions in Ohio. General discussion. 6000 w. Pro Am Road Bldrs. Assn—1913. No. 46165 N.

Inspection Instructions of the Bureau of Highways, Manhattan Borough, New York City, for the Guidance of Its Inspectors of Street Paving. Gives instructions recently issued by the Commissioner of Public Works. 7500 w. Engng & Con— April 2, 1913. No. 41023.

General Instructions to Inspectors of Street Paving. Abstract of instructions recently issued by the Bureau of Highways of the Borough of Manhattan, N. Y. City. 3000 w. Eng News—May 29,

1913. No. 42562.

Instructions of the Bureau of Highways, Queens Borough, N. Y. City, to Inspectors of Highway Improvements. Gives rules and regulations for the street paving inspectors' guidance. 5500 w.

Macadam

Engng & Con—June 11, 1913. No. 42796. Instructions of the Board of Local Improvements, Chicago, Ill., to Its Sub-Inspectors of Paving Work. Also specifications for concrete pavements. 4800 w. Engng & Con—June 25, 1913. No. 43193.

Labor

Labor Problem in Road Construction. P. St. J. Wilson. Read before the Detroit Road Cong. Explains the labor situation in Virginia, and experience with convict labor. 1500 w. Mfrs' Rec—Oct. 2, 1913. No. 45620.

Convict Labor on Road Work. A discussion introduced by Mr. Hill. 5500 w. Pro Am Road Bldrs Assn-1913. No.

46174 N.

Central Road Authorities. Paul D. Sargent. Greater part of a paper read before the Int. Road Cong., London. Traces the development of a few state highway laws and shows the transition from local to centralized control of road offices. 3500 w. Engng & Con-July 9, 1913. No. 43609.

Lighting

Methods of Lighting Public Highways and Vehicles. Abstracts of papers and communications submitted at the Int. Road Congress, with discussion. 5000 w. Surveyor—June 27, 1913. No. 43632 A.

Location

Economics of Highway Location; Formulas and Methods Employed in Loca-Emil Masik. ting Roads. Condensed from an article before the Pub. Road Cong. A study from a European point of view. Considers general direction, alignment, grades, methods, etc. 7500 w. Engng & Con—Oct. 29, 1913. No. 46382.

Louisiana Highways. W. E. Atkinson. Read before the Detroit Road Cong. An account of the road work in progress. 2000 w. Mfrs' Rec—Oct. 2, 1913. No.

45621.

Macadam

A Suggested Improvement in Building Water-Bound Macadam Roads. J. L. Meem. Describes a method of proportioning the rock, which has proved successful. 700 w. Pro Am Soc of Civ Engrs—Dec., 1912. No. 39291 F.

Bituminous Macadam Construction. A. N. Johnson. Details of construction of such roads. 5000 w. Indiana Engng Soc

-1912. No. 41732 N.

Conclusions and Cost Data on Macadam Construction in Illinois. Conclusions as to waterbound macadam and bituminous macadam under Illinois conditions, as given in the last annual report of the Commission. 4500 w. Engng & Con-May 28, 1913. No. 42515.

Bituminous Macadam Construction by the Illinois Highway Commission. scription of the apparatus used and methods employed in constructing this type of surfacing, as given in the last annual report. 3000 w. Engng & Con— May 28, 1913. No. 42513.

Some Notes on Macadam Roads and Pavements. Fred L. Macpherson. A discussion of paving materials and their characteristic, and the requirements of modern traffic. 6000 w. Can Engr— July 24, 1913. No. 43907.

The Penetration Method in Macadam Road Construction. W. W. Crosby. Condensed paper as read at the Third Int. Roads Cong. Considers modern American practice in the construction of macadamized roads. 3000 w. Can Engr— July 17, 1913. No. 43826.

Damage to Macadamized Roads by Mechanically Propelled Vehicles. H. T. Wakelam. Calls attention to the damage and the methods of minimizing the destruction. General discussion. 3500 w. Surveyor-Aug. 8, 1913. No. 44450 A.

Macadam Construction with Slag Concrete Binder. Abstract from a report by A. Cornet, presented at the Third Int. Describes this method of con-Cong. struction. 2000 w. Engng & Con—Aug. 27, 1913. No. 44773.
Tests of Materials Used in Construc-

tion of Macadamized Roads. Logan Waller Page. Read at Int. Road Cong. Discusses the mechanical, chemical and physical destructive agencies. 1500 w.

Con Rec.—Aug. 20, 1913. No. 44555.
Summary of Practice of Various
Countries in the Construction of Macadamized Roads Bound with Bituminous, Tarry or Asphaltic Materials. Gives conclusions as adopted by the Third Int. Road Cong. 7800 w. Engng & Con— Sept. 24, 1913. No. 45452.

Some Features of Macadam Construction. T. R. Agg. Discusses water bound macadam and bituminous macadam con-struction. General discussion 8800 w struction. General discussion. 8800 w. Pro Am Road Bldrs' Assn—1913. No.

46168 N.

Selection of Materials for Macadam Logan Waller Page. Read at Detroit Road Cong. Discusses methods, with special reference to laboratory tests as an aid. 2800 w. Mfrs' Rec—Oct. 2, 1913. No. 45618.

Treatment of Worn Out and Ravelled Macadam Surfaces. Edmund A. Stevens. Read at Am. Road Cong. Describes the trouble and explains its causes, discussing the remedy. 2000 w. Con Rec—Oct. 8, 1913. No. 45791

See also Tar-Macadam, under Roads and Pavements.

ROADS AND PAVEMENTS

Oil Storage

Macadam Material

The Petrographic Study of Road Building Rocks in the U.S. Office of Public Roads. E. C. E. Lord. Read before the Am. Assn. for the Adv. of Science. Describes the method of examination of road material for the construction of mac-2000 w. Engng & Conadam roads. Feb. 5, 1913. No. 39693.

Machinery

Evolution of Road-Building Machinery. W. A. McLean. Considers the continuous improvement in design, present tendency toward the use of heavier equipment, etc. 2000 w. Con Rec-April 30, 1913. No. 42072.

Maintenance

Repair and Maintenance of Highways. Laurence J. Hewes. Deals with macadam roads of all kinds, gravel and sand-clay roads, and earth roads. Ills. 71 pp. U S Dept of Agri, Bul 48—May 15, 1913. No. 42497 N.

Modern Road Maintenance. R. Drummond. Read before the Inst. of Munic. & Co. Engrs. Remarks on the development of mechanically propelled traffic methods of renewal, materials, &c. 2000 w. Surveyor—July 25, 1913. No. 44175 A.

Road Maintenance and Improvement-Present and Future. Harold Collins. Read before the Inst. of Munic. & Co. Engrs. Remarks on the changed conditions, regulation of wheel loads, road construction, &c. General discussion. 4500 w. Surveyor—July 25, 1913. No.

44173 A.

Road Maintenance in Herefordshire. G. H. Jack. Extracts from last annual report, describing methods of treatment. 2000 w. Surveyor-July 25, 1913. No. 44176 A.

The Patch System of Road Maintenance. Gives fundamental rules for this method, taken from a paper by Zdensko Vytvan, read at the Third Int. Road Cong. 2500 w. Engng & Con-Sept. 3, 1913. No. 44976.

See also Construction, under Roads and Pavements.

Manitoba

The Road Question in Manitoba. Address before the Union McGillivray. of Manitoba Munic. Discusses legisla-2500 w. tion affecting highways. Engr—Jan. 16, 1913. No. 39381.

Maryland

Engineering Organization of the Forces of the State Roads Commission of Maryland. Abstract of a lecture by W. W. Crosby, describing the Maryland engineering organization. 3000 w. Engng & Con—Aug. 20, 1913. No. 44494.

Materials

City Pavements. G. G. Powell. Abstract of a paper read before the Ontario Good Roads Assn. Deals with pavement work in Toronto. 2500 w. Can

Engr—March 27, 1913. No. 40935.
Road Metal. From a government report, by W. A. McLean. Considers depth of material, waterproofing, quality of stone, etc. 2500 w. Can Engr—April stone, etc. 2500 w. 10, 1913. No. 41205.

See also Road Models and Road Metal,

under Roads and Pavements.

Material Transport

Mechanical Haulage. George Symon. A statement showing the expenditure and earnings of a steam cart used at Blaydon, Eng. 1500 w. Surveyor-Nov. 29, 1912. No. 38120 A.

Michigan

Road Construction in Michigan. Frank F. Rogers. Information concerning the construction, grading, drainage and cost of macadam roads. 3000 w. Munic Engng-April, 1913. No. 41606 C.

Motor Traffic

Automobiles and Improved Logan Waller Page. Discusses the economics of motor traffic and of highway construction. Ills. 2000 w. Sci Am-Sept. 6, 1913. No. 45016.

New Jersey

Experimental Road Work of the Public Roads Department of New Jersey. Description of the work taken from a report of Robert B. Gage. 2500 w. Engng & Con—June 4, 1913. No. 42662.

New York

Advisory Roads Commission for New York State. Individual report of Mr. Eugene W. Stern. Considers the organization and administration, types of roads, maintenance, etc. 2500 w. Can Engr—April 17, 1913. No. 41341.

Reports on the Organization of a Highway Department for the State of New York. Gives reports submitted by the commission appointed by the governor. 2500 w. Eng News—Ap 1913. No. 41333. The Long Clove-Haverstraw Eng News-April 17,

Highway. Describes the construction of a road on the west bank of the Hudson River on slope of steep talus, which was unusually difficult. Ills. 1600 w. Munic Jour-May 1, 1913. No. 41856.

Resumption of Road Work in New York State. Charles E. Foote. An account of the work in progress this season. Ills. 2000 w. Horseless Age-Aug. 13, 1918.

No. 44367.

Oil Storage Municipal Plant for the Storage of Road Oil. William H. Kershaw. Abstract

Ontario

ROADS AND PAVEMENTS

Repairs

of a paper read before the Am. Assn. for the Adv. of Science. Considers types and gives an illustrated description of type recommended. 1100 w. Engng & Con— Feb. 5, 1913. No. 39694.

Ontario

Good Roads in Ontario. Abstract of an address by W. A. McLean before the Ontario Good Roads Assn. Briefly discusses road drainage, labor, freight rates on stone, etc. 2200 w. Can Engr-March 20, 1913. No. 40786.

See also Construction, under Roads and

Pavements.

Organization

Organization of a Municipal Highway Bureau. Gives a suggested organization for a bureau of highways and street cleaning, showing the essential features to be considered. 2500 w. Engng & Con to be considered. 2500 w. I.—Dec. 18, 1912. No. 38313.

Paving Conditions in Southern Cities. Information concerning conditions in Birmingham, Ala.; Nashville, Tenn.; Louisville, Ky., and other places. Ills. 2500 w. Munic Engng — Feb., 1913. No. 40094 C.

Paving Blocks
Wire-Cut Lug Paving Blocks. F. B. Marsh. Describes this paving block, explaining its advantages. Ills. 1500 w. Eng Rec.—July 12, 1913. No. 48654.

Paving Machine

Street-Paving Machine. Ashley. Illustrated description of a machine in Los Angeles for the complete mechanical paving of streets. 900 Eng News—Nov. 7, 1912. No. 37814. 900 w.

Paving Maintenance

See same heading under STREET AND ELECTRIC RAILWAYS.

Paving Tests

Tests of Concrete and Brick Pave-ments. Gives details of types tested with the "determinator" at the Am. Road Cong., with statement of results. 1500 w. Eng Rec—Oct. 25, 1913. Ills. 46208.

Pennsylvania

The Highway Emergency in Pennsylvania. Charles E. Foote. Discusses road conditions in the State. 2000 w. Horseless Age-Aug. 27, 1913. No. 44870.

Philippines

Road Construction and Maintenance in the Philippines. Information from the recently issued report of the Bureau for the year ending June 30, 1912. 2000 w. Engng & Con—April 30, 1913. No. 41819.

Plank Road

Building a Paved Roadway Across a Swamp. James Owen. Explains the conditions and problems encountered in constructing a plank road from Newark to Jersey City, N. J. 1500 w. Eng News— March 27, 1913. No. 40936.

Planning

The Planning of New Streets and pads. Abstracts of papers and communications read before the Int. Road Congress, dealing with the construction and maintenance of roads. Also discus-10000 w. sion. Surveyor-June 27, No. 43631 A. 1913.

Public Roads

Report of the Director of the Office of Public Roads for 1912. Logan Waller Page. Reviews the work of the year and outlines the plans for the current year. 43 pp. U S Dept of Agri—Nov. 4, 1912. No. 38668 N.

Purchasing

Systematizing the Purchase of Road Materials and Equipment. Henry G. Read at Detroit Road Cong. Shirley. Explains the system used by the State Roads Commission of Maryland. 1200 w. Mfrs' Rec-Oct. 2, 1913. No. 45619.

Quebec

Road Practice of the City of West-A. Currie. Describes various types of pavement and their construction. Ills. 5000 w. Con Rec-June 11, 1913. No. 42804.

Reconstruction

Methods and Cost of Roadway Reconstruction in the Lincoln Park System, Chicago, During 1911. M. M. Lawrence and W. S. Maynard. Describes the work and gives tabulated costs. 2500 w. Engng & Con—Dec. 4, 1912. No. 38049.

Road Making Developments. Describes the main features of reconstruction work in the British Isles. 3000 w. Surveyor

June 13, 1913. No. 43136 A.

The Reconstruction of Carriageways.

Ernest H. Essex. Extracts from the annual report describing modern methods tried in Leyton. 11500 w. Surveyor— Oct. 10, 1913. No. 45975 A.

Reinforced Concrete

Construction of Reinforced Concrete Pavements and Roadways. H. S. Doyle. Illustrates and describes methods of construction. 4500 w. Con Rec-June 11, 1913. No. 42805.

Reinforced Concrete Paving at Port Huron, Mich. Earl R. Whitmore. study of the comparative merits of asphalt macadam and reinforced concrete, with outline of specifications for concrete pavement. 4000 w. Engrg & Con—July 16, 1913. No. 43818.

Repairs

Repair and Maintenace of Roads. Dr. L. I. Hewes. Read before the Ontario Good Roads Assn. Considers the repair

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ROADS AND PAVEMENTS

Street Cleaning

and maintenance of a typical, well organized country road system. 2500 v Can Engr—March 13, 1913. No. 40678. 2500 w.

Repaving

The Laying of 102 Miles of Smooth Road Surface in One Borough in Five Months. G. Howland Leavitt. Outlines work in the Borough of Queens, New York City. 5000 w. Pro Am Road Bldrs Assn-1913. No. 46173 N.

Resurfacing

The Resurfacing of 102 Miles of Highway in Five Months. An account of work of the Highway Bureau of Queens Borough, New York City. 2500 w. Engng & Con—Dec. 18, 1912. No. 38314.

Road Congress

Lessons from the International Road ongress. William D. Sohier. 400 w. Congress. Eng Rec-Oct. 11, 1913. No. 45811.

Road Machinery Modern Road Making Machinery and Its Uses. T. R. Agg. Read before the Illinois Soc. of Engrs. & Survs. Describes the variety and uses of present-day ma-4000 w. Engng & Con—Feb. 5, 1913. No. 39695.

Road Motal

Tests of Road Metal. C. W. L. Alexander. Report of tests made in the Olsen rattler, at University College, Cork. 1800 Surveyor — Feb. 14, 1913. 40121 A.

Road Models

Descriptive Catalogue of the Road Models of the Office of Public Roads. Gives 17 plates, illustrating standard types of road construction, with descrip-tions arranged to show the historic development of road building. 11000 w. U.S. Dept of Agri, Bul 47—March 27, 1913. No. 41686 N.

Road Stones

Nomenclature of Road Stones. cusses the standardization of road material, giving a short résumé of work already accomplished. 1400 w. Surveyor -Aug. 1, 1913. No. 44311 A.

Road Traffic

Road Traffic and Treatment. Col. William D. Sohier. Read before the Am. Road Bldrs. Assn. Shows the importance of knowledge of traffic in making a wise selection of pavement and materials. 1800

w. Munic Jour—Jan. 2, 1913. No. 38787. A Proposed Standard Record of Street Traffic. From a report to the Am. Soc. of Munic Imp. Discusses the need for traffic records and presents a method for practical use. 2500 w. Eng News—Jan. 2. 1913. No. 38777.

Sand-Clay

Sand-Clay Roads in North Carolina.

Information from a report by Dr. Joseph Hyde Pratt concerning the materials, construction, etc. 2500 w. Eng Rec-Dec. 7, 1912. No. 38077.

Saskatchewan

Roads of Saskatchewan. A. J. McPher-Read before the Can. Highway Information concerning the development, the organization, construction, maintenance, etc. 6000 w. Can Engr— Nov. 21, 1912. No. 37774. The Red and Black Roads of Saskatche-

wan. Condensed report of Prof. W. W. Andrews. Gives an account of experimental investigations. 3000 w. Engr— April 17, 1913. No.41339.

Specifications

Specifications for Roads of Different Types. Gives specifications used in Ontario for various kinds of pavement. 5500 w. Can Engr—Jan. 2, 1913. No. 38839.

Sprinklers

French Motor Sprinkling Carts. Francis P. Mann. Illustrates and describes types. 800 w. Munic Jour—Feb. 6. 1913. No. 39677.

Stone

The Construction of Broken Stone Roads. E. A. James. Considers the advantages of this type for rural highways, and approved constructional practice. 2200 w. Con Rec-April 30, 1913. No. 42071.

Street Cleaning

Methods and Costs of Street Cleaning at Washington, D. C., During 1911-12. An account of the work done, methods, and cost. 2000 w. Engng & Con—Dec. and cost. 2000 w. 18, 1912. No. 38312.

Newark Street Cleaning Records. Describes methods of cleaning by machine and hand brooms and flushes, and records that permit comparison of work by different foremen. Ills. 2500 w. Munic Jour—Feb. 6, 1913. No. 39675.

Street Cleaning Methods in European Cities. Information from consular reports regarding London, Glasgow, Havre, Hamburg, and other cities. 7000 w. Engng & Con — March 26, 1913. No. 40840.

Street Cleaning in Chicago, and Suggested Standards for Increasing the Effi-Information from the report of the Efficiency Division of the Civil Ser-

vice Commission. 6500 w. Engng & Con—Jan. 1, 1913. No. 38769.

Street Cleaning Efficiency Standards for Chicago. F. H. Cenfield and A. B. Segur. Standards based on a detailed analytical study of street-cleaning conditions and methods. 2700 w. Eng News —Feb. 27, 1913. No. 40236.

Tar Macadam

Street Cleaning in Downtown Chicago. Richard T. Fox. Explains the organization and method of providing for the cost. Discussion. 8500 w. Jour W Soc of Engrs—Feb., 1913. No. 40410 D.

Motor Road-Cleaning Machine. Illustrated description of a mechanically-driven road-sweeping machine on trial in England. 800 w. Engng — April 11, 1913. No. 41393 A.

Pneumatic Street Cleaning. C. A. Tripp. A critical discussion of street cleaning systems in use, and presenting the advantages of pneumatic cleaning. Ills. 2500 w. Indiana Engng Soc—1912. No. 41731 N.

Cleaning Streets in Washington. J. W. Paxton. Describes methods which include hand patrol, machine-broom cleaning, squeegees and flushing. 2000 w. Eng Rec—Sept. 27, 1913. No. 45478.

Recent Progress in Methods and Character of Street Cleaning. S. Whinery. Read before the Am. Pub. Health Assn. On improved machinery and appliances, analysis of cost and problems receiving attention. 1700 w. Engng & Con—Sept. 17, 1913. No. 45227.

See also Cost Keeping, under Municipal.

Street Design

Planning of New Streets and Roads. Abstract of a report presented by Nelson P. Lewis to the Third Int. Road Cong. Discusses conditions in the United States and the problems they present. 5000 w. Engng & Con—Sept. 10, 1913. No. 45057.

Principles Underlying Scientific Street Design. J. Russell Ellis. Read before the Regina Engng Soc. Discusses details and requirements. 3500 w. Con Rec—Aug. 27, 1913. No. 44865.

Street Sprinkling

Street Sprinkling and Oiling at St. Paul, Minn. Information from the last annual report of the commissioner of public works, describing the methods followed. 3000 w. Engng & Con—Sept. 10, 1913. No. 45058.

Substructure

The Choice of Materials for Substructures (La scelta dei materiali da massicciata). Gino Toller. Theories for correct distribution of materials, and apparatus for testing their qualities. Ills. 4200 w. Monit Tec—Jan. 30, 1913. No. 40617 D.

Suburban

Development of the Modern Country Roadway. George C. Warren. Discusses the country roadway as distinguished from the city pavement, outlining its development. Ills. 12800 w. Jour Am Soc of Engng-Con—Jan., 1913. No. 41263 C.

of Engng-Con—Jan., 1913. No. 41263 C. Good Roads. C. N. Little. Address at Boise, Idaho. The importance of good roads, especially to the farmer, with discussion of earth, gravel, macadam and related subjects. 6500 w. Jour of Idaho Soc of Engrs—June, 1912. No. 41727 N.

Surfac

Experiments with Road Surfaces. Discusses results of experiments in England to determine the wearing qualities of different road surfaces. Tabulated data, and editorial. 6500 w. Engr, Lond—Jan. 24, 1913. No. 39811 A.

The Wheel and the Road. R. E.

The Wheel and the Road. R. E. Crompton. Appendix by Leslie Hounsfield. Read before the Inst. of Auto. Engrs. Discusses the wear of pavements under motor vehicles and the surface treatment and hinders used. Ills. 6500 w. Surveyor—April 18, 1913. No. 41756 A.

Road Pavements on the Pacific Slope. T. S. Scott. Illustrates and describes surface treatments suited to the climate. 1500 w. Con Rec—June 18, 1913. No. 42973.

Surface Treatment

The Splinter Treatment and Waste Sulphite Liquor Oil Sand Treatment as Practiced in Connecticut. Maurice O. Eldridge. Illustrated account of the splinter treatment for gravel roads and the waste sulphite liquor oil sand treatment for new macadam roads. 1000 w. Engng & Con—Dec. 11, 1912. No. 38148. Surfacing

The Top-Soil Method of Rose Construction. Abstract of paper by Charles M. Strahan, read before the Am. Road Cong. Explains the methods and principles involved. 2500 w. Engng & Con—Nov. 13, 1912. No. 37563.

Road Carpets. W. W. Crosby. Dis-

Road Carpets. W. W. Crosby. Discusses the effects of motor traffic on macadam roads and their maintenance, and the limits of the carpeting system, the materials and methods. 3000 w. Surveyor—April 11, 1913. No. 41382 A.

Tar Macadam

Tar Macadam Construction by the Board of Public Roads of Rhode Island in 1912. Herbert C. Poore. Gives the bituminous surface specifications used. Ills. 2000 w. Engng & Con—Feb. 26, 1913. No. 40228.

Tar-Spraying and Tar-Macadam in Situ. Thomas Aitkin. Observations on results obtained from actual experience in the use of high-pressure tar-spraying machines in surface treating macadamized roads and kindred matters. 4500

Wood Block

Traction

No. Surveyor — June 27, 1913. 43629 A.

Traction

Some Recent Tests to Determine Effects of Grade and Surface of Roads on Tractive Force. Abstract of a paper by E. B. McCormick, read before the Am. Road Cong. Describes tests run with a traction dynamometer wagon, giving tabulated results. 2500 w. Engng & Con—Nov. 6, 1912. No. 37283.

Traffic

See City Traffic, under Municipal.

Traffic Census

Traffic Census on Highways. L. J. Hewes. Directions for the taking of traffic data in connection with road improvements. 2000 w. Eng Rec-May 17, 1913. No. 42220.

Traffic Study

Traffic Study on the Highways of Massachusetts. Charles E. Foote. A study of what amount of traffic different kinds of roadways will stand and the relative destructive effects of different kinds of traffic. 2200 w. Horseless Age—Oct. 1, 1913. No. 45632.

The Traffic Census as a Preliminary to Road Improvement. William D. Sohier. Explains how the traffic census is made, its importance, and the increase caused by good roads. Things that affect the wear of roads, maintenance, costs and related topics. 11500 w. Pro Am Road Bldrs Assn—1913. No. 46172 N.

Report of the Parliamentary Commission on Motor Traffic in London (Bericht der Parlamentskommission über den Verkehr mit Motorfahrzeugen in London). A division of the study, the sittings of the commission, and a résumé of the findings. Serial, 1st part. 3100 w. Auto Rund—Sept. 15, 1913. No. 46057 D.

Comparative Advantages of Different Types of Roads. John R. Robbin. Read at Int. Road Cong. A technical and economic study. 1400 w. Engrg & Con—Aug. 6, 1913. No. 44210.

Site Value Deductions for Construction of and Appropriation of Land for Roads. Richard G. G. Reed. Read at meeting of the Surveyors' Inst. Discusses some of the difficulties of the British Finance Act, 1910. 2500 w. Archt, Lond—May 2, 1913. Serial. 1st part. No. 41989 A.

Wear

The Extent and Wear of Pavements in Canadian Cities. Classification of data on the various types in extensive use and their suitability for different kinds of traffic. 4500 w. Can Engr—Sept. 25, 1913. No. 45505.

Wisconsin

Instructions for Foremen and Contractors on State Road Construction in Wisconsin. Abstract of Bul. 12, Wis. State Highway Commission. 6000 w. Eng News—Aug. 14, 1913. No. 44370.

Wood

Practice and Experience with Algarrobo Wood Pavements in Buenos Aires, Argentina. Information from a paper by Claro C. Dassen, read before the Int. Road Cong. Describes practice in using algar-robo block pavement. Ills. 1700 w. Engng & Con—Aug. 20, 1913. No. 44498. Third International Road Congress.

Discussions and abstracts of papers on wood paving. 5000 w. Surveyor—July 25, 1913. Serial, 1st part. No. 44177 A.

Wood Block

Creosoted Block Paving in Chicago. John Ericson. Discusses the treatment Ills. 1500 w. of the blocks.

Engng—Jan., 1913. No. 39534 C.
Creosoted Wood Block Pavement Laid by City Day Labor in Minneapolis. Ellis R. Dutton. Read before the Am. Road Bldrs. Assn. Describes the work, discussing points necessary to secure good construction. 1600 w. Eng News—Jan. 2, 1913. No. 38780.

How Nearly Does the Modern Yellow Pine Block Pavement Approach to the Ideal Pavement, and What Improvements Can We Suggest? H. L. Collier. Considers the cardinal points of an ideal pavement, and compares the yellow pine block. Discussion. 8500 w. Am Wood

Pres Assn—Jan., 1913. No. 43279 N.
Timber for Creosoted Block Paving.
Harry G. Davis. Discusses the essential principles to insure success in this kind of pavement. Discussion. 2200 w. Am Assn-Jan, 1913. Wood Pres 43280 N.

Laying Wood Block Pavement. H. S. Loud. Directions for the proper construction. 8500 w. Am Wood Pres Assn

Jan., 1913. No. 43281 N. European Creosote Specifications for Paving Block for City Streets. E. A. Discusses the desirability of Sterling. reducing the amount of oil impregnation. 1600 w. Eng Rec-May 3, 1913. No. 41847.

Wood Block Pavements. George W. Tillson. Presented at Third Int. Road Cong., London. Reviews their develop-ment in the United States and the specifications governing their use. 5000 w. Can Engr-July 24, 1913. No. 43909.

Creosoted Wood Block Pavement in the City of Minneapolis, Minn., as Laid by the City, by Day Labor. Ellis R. Dutton. Illustrated description of the work with general discussion. 3000 w. Pro Am Road Bldrs Assn—1913. No. 46163 N.

WATER SUPPLY

Ashokan Reservoir

Analyses

The Interpretation of Water Analyses. Jerome Cochran. Shows the importance of water supply inspection, and considers the physical, chemical, microscopical and bacterial tests. 1200 w. Cornell Civ Engr—Feb., 1913. No. 40091 C. Determinations of Real and Doubtful

Value in the Routine Water Analyses Usually Made in Connection with Sanitary Surveys. Dr. H. E. Bernard. Read before the Am. Pub. Health Assn. Discussion and conclusions. 2200 w. Engng & Con—Sept. 17, 1913. No. 45230.

Aqueducts

Some Notes on Construction Methods and Costs of Work on the Los Angeles Aqueduct. Information abstracted from the latest annual report of William Mul-4000 w. holland. Engng & Con-Nov.

27, 1912. No. 37924.

The Final Completion and Operation of the Los Angeles Aqueduct. Illustrated general description of the whole work, the economies of construction and the economic importance of the enterprise. 3500 w. Can Engr-Jan. 9, 1913. No. 38961.

Construction and Completion of the Los Angeles Aqueduct. Burt A. Heinly. Illustrated description of this remarkable

water supply, irrigation and power project. 5000 w. Engineering Magazine—April, 1913. No. 40906 B.
Surplus Water of the Los Angeles Aqueduct. Burt A. Heinly. Explains the Mulholland plan and the Graham plan for selling water that will not be needed

for some years. 5500 w. Eng News—March 13, 1913. No. 40655.
Completion of the Los Angeles Aqueduct. Burt. A. Heinly. Illustrates and describes features of this great engineering work, and gives information concerning the difficulties overcome in its con-struction and matters related. 3500 w. Munic Engng — April, 41605 C. 1913.

The Meaning of the Los Angeles Bond Election. Editorial on the defeat of the bond issues for the completion of work accessory to the Los Angeles aqueduct, and the principles involved. 2500 w. Eng

News—May 1, 1913. No. 41868.

Construction Methods Employed on the Shafts and Tunnel of the Under-City Section of the Catskill Aqueduct. Information from the annual reports of the Board of Water Supply of the City of New York for 1911 and 1912. Ills. 3500 w. Engng & Con-June 18, 1913. No.

The Completion of the Los Angeles Aqueduct. Burt A. Heinly. Brief illus-

trated description of the works, with historical details and explanation of the operation and other information. 4000 w. Eng News-June 19, 1913. No. 42981.

The Failure of the Sand Canyon Pressure Tunnel Siphon of the Los Angeles Aqueduct. Burt A. Heinly. Illustrated account of the break that occurred on May 19, and the rebuilding made necessary. 1200 w. Eng News—June 5, 1913. No. 42702.

Antelope Valley Siphon, Los Angeles Aqueduct. William W. Hurlbut. Illustrated description of four-mile concrete and steel pipe riveted under the bonus system. 2500 w. Eng Rec—July 19, 1913. No. 43785.

The San Francisquito Power Station No. 1. Illustrated description of the high head development in the Los Angeles aqueduct, receiving water through riveted steel, lap-welded and banded lap-welded penstocks. 2000 w. Eng Rec—Aug. 23, 1913. Serial, 1st part. No. 44549.

Monolithic Construction of Heavily Reinforced. 17-foot Circular Aqueduct. Henry Wade Nelson. Illustrates and describes construction methods on Kensico effluent conduit of the Catskill aqueduct. 4500 w. Eng Rec—May 3, 1913. No.

41850.

The Apulian Aqueduct, Southern Italy (L'aqueduc des Pouilles Italie méridion-Sennoro Fattorini. General description of aqueduct, 213 km. in length, furnishing water for domestic, irrigation and industrial purposes for three provinces. Ills. 3700 w. Genie Civil—Aug. 23, 1913. No. 45352 D.

The Winnipeg-Shoal Lake Aqueduct. Maps and description of the proposed route and design of the 95-mile water supply line for the Winnipeg water district. 3000 w. Can Engr—Oct. 23, 1913.

No. 46190.

See also Steam Shovels, under Construction, and Catskill Aqueduct, under Water Supply.

Artesian

The Effect of Artesian Water Upon Galvanized Steel Pipe at Moline, Ill. From a paper by D. H. Stacks, read before the Illinois Water Sup. Assn. Gives details of the experience and the methods employed in removing the cause of the trouble. 1600 w. Engng & Con-May 28, 1913. No. 42516.

Ashokan Reservoir

Providing for Ten Million. J. F. pringer. Illustrated account of the clearing out of the Ashokan reservoir which will eventually supply 500,000,000 gallons of water per day for New York

Birmingham, England

WATER SUPPLY

Dam Design

City. 3500 w. Cassier's-July, 1913. No. 43352.

Birmingham, England

The Works for the Supply of Water to the City of Birmingham from Mid-Wales. Ernest Lawson Mansergh and Walter Leahy Mansergh. Illustrated detailed description of the scheme and its execution. Also abstract of discussion. Plates. 90 Inst of Civ Engrs-No. 3963. No. pp. Inst 42369 N.

Canal Linings

Lining Ditches with Reinforced Concrete. Describes a method of lining irrigation ditches with expanded metal and cement mortar applied with the "cement gun." Ills. 1800 w. Concrete-Cement Age-June, 1913. No. 42808.

Catskill Aqueduct

Creating Subterranean River Ninety Miles in Length. Brief illustrated account of how Catskill water is being brought to New York. 2200 w. Sci Am —March 1, 1913. No. 40293.

Supplying a Metropolis with Mountain Water. Illustrates how mining operations are being carried on through the heart of New York to carry the water into Brooklyn and Queens, describing interesting methods of work. 2500 w. Sci Am—March 1, 1913. No. 40294.

Use, Waste and Metering of Water in Statements from a recently published report concerning the consumption and waste of water and the need of metering as a remedy. 1500 w. News—Dec. 26, 1912. No. 38589.

See Pipes, under Water Supply.

Hankow Water Works. Illustrated description of these works and their construction, explaining labor conditions and other particulars. 2800 w. Engng other particulars. 2800 w Feb. 7, 1913. No. 39914 A.

Chlorination

Chlorination Plants, Croton Water Supply. T. D. L. Coffin. Illustrates and describes several plants in the Croton drainage area, and gives results of a temporary plant. 2000 w. Eng News—Feb. 27, 1913. No. 40239.

Elimination of Tastes from Chlorinated Water. Arthur Lederer and Frank

nated Water. Arthur Lederer and Frank Bachmann. Gives results of careful tests made on L. Michigan water, concluding that sodium thiosulphate is a satisfactory remedy. 2500 w. Eng Rec—March 22, 1913. No. 40766.

Clarification

Studies on the Clarification of Treatment Waters at Birkenberg (Studien zur Klärung der Aufbereitungswasser in Birkenberg). Hans Fleissner. Modes of separating turbid matter in water for use in silver and lead extraction. Serial, 1st part. 2100 w. Oest Zeit f Berg u Hütten—Sept. 20, 1913. No. 46000 D.

Coagulation

A Study of the Efficiency of Coagulating Basins. W. F. Monfort. A paper before the Illinois Water Supply Assn. A summary of facts relating to the efficiency of coagulating basins of the St. Louis waterworks. 4500 w. Engng & Con-March 26, 1913. No. 40843.

Colorado

Municipal Water Supplies of Colorado. Clement C. Williams. Aims to present the sanitary conditions of the state in regard to municipal water supplies, and to suggest the water resources available. 56 pp. Univ of Colo Bul—Sept., 1912. No. 40418 N.

Conduits

A New Formula Under Uniform Systems for Circular Hydraulic Conduits (Nuova formula sul regime uniforme nelle condotte d'acqua a sezione circo-lare). L. Conti. Mathematical development of a uniform formula. Serial, 1st part. 3600 w. Ann della Soc d Ing e d Arch Ital-March 1, 1913. No. 40608 E.

Eight-Mile Concrete Conduits at Baker, Oregon. Describes method of replacing a wooden flume with molded pipes without interrupting service. 1500 w. Eng Rec—May 24, 1913. No. 42380.

Conservation

Progress in Developing and Conserving Water Supply for Municipal and Domestic Purposes Allen Hazen. Extracts from a paper read at the Cong. of Ap. Chem. Discusses possibilities in the United States. 3000 w. Surveyor-Nov. 22. 1912. No. 38024 A.

Corresion

Decarbonation as a Means of Removing the Corrosive Properties of Public Water George C. Whipple. Supplies. methods discussed are aëration and the use of soda and lime. 8000 w. N Eng W-Wks Assn—June, 1913. No-

Dam Design

The Significance of "The Middle Third." John C. Trautwine, Jr. Mathe-Middle matical discussion of the design of dams. and similar structures. 1000 w. Pro Engrs' Club of Phila-Oct., 1912. No. 37713 D.

The Design and Construction of Masonry Dams. H. J. F. Gourley. Discusses the selection of a site, the foundations, the design, construction, drains, facing, etc. 5000 w. Surveyor—Nov. 8, 1912. No. 37636 A.

A New Phase of State Supervision of

Dam Design

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Dams

Dams. Editorial on the need of raising the standard of design in dams, advising a state board which shall possess sufficient power to refuse to authorize construction. 1200 w. Eng News—Nov. 21, 1912. No. 37729.

State Control of the Design and Construction of Dams and Reservoirs. Actual Practice in Eastern Connecticut. Charles E. Chandler. Discusses the operation of the law in regard to new dams in Eastern Connecticut. General discussion. 6500 w. Jour N Eng W-Wks Assn—Sept., 1912. No. 37911 F.

State Supervision of Design, Construction, and Operation of Dams and Reservoirs. Frank P. McKibben. Discusses

State Supervision of Design, Construction, and Operation of Dams and Reservoirs. Frank P. McKibben. Discusses the conditions as to state supervision and outlines the procedure recommended. Discussion. 8000 w. Jour N Eng W-Wks Assn—Sept., 1912. No. 37913 F.

Protection for Hollow Reinforced Concrete Dams. G. L. Bilderbeck. Discusses details in the design of dams of this class, and describes a method of protection. Ills. 1700 w. Eng News—Nov. 21, 1912. No. 37727.

The Reversed Dam; a Hollow Concrete Dam of a New Type Frank C. Osborn. Drawing and computations of a typical dam of this design. 1200 w. Eng News—Dec. 19, 1912. No. 38333.

Dams

Some Features of the Construction and Failure of the Austin, Pa., Dam. T. Chalkley Hatton. A statement by the constructing engineer explaining the failure that occurred Jan. 23, 1910. Ills. 3500 w. Jour N Eng W-Wks Assn—Sept., 1912. No. 37914 F.

Amity Dam in the Arkansas River, Golorado. Sam G. Porter. Illustrated description of a development of pile, crib and pier, and reinforced concrete construction for dams successfully built on the sandy bottom of a river subject to floods. 2500 w. Eng Rec—Nov. 16, 1912. No. 37582.

Method and Cost of Constructing Two Dams for an Irrigation Works at Santa Fe, New Mexico. Ernest E. Meier. Outlines the project for irrigating 10,000 acres of desert land and illustrates and describes the construction of an uncoursed rubble masonry dam 80 ft. high, and an earth and rock fill dam with concrete core wall. 3500 w. Engng & Con—Nov. 13, 1912. No. 37568.

Methods and Cost of Constructing an Earth Dam, With Upstream Concrete Paving and Core Wall, for McAlester, Okla., Water Works. J. W. Holman. Sketch plans and description of work,

with costs. 2500 w. Engng & Con—Nov. 13, 1912. No. 37565.

Methods and Costs of Rebuilding South Dam, Head of Rock River Rapids at Lock 35 of the Illinois and Mississippi Canal. Charles W. Durham. Cross sections and description of the work. 2000 w. Eng & Con—Nov. 13, 1912. No. 37569.

Rio Grande Reservoir Dam. Illustrated description of a composite riprapped earth and rock-fill dam constructed by the basin-and-embankment method near Creede, Colo. 3000 w. Eng Rec—Nov. 9, 1912. No. 87351.

The Riverside Dam, Indianapolis, Ind.; Its Successive Failures and Repairs. Charles Brossmann. Illustrated description of the various failures and repairs of the structure. 900 w. Eng News—Nov. 7, 1912. No. 37315.

Nov. 7, 1912. No. 37315.

Flashboard Design and Experiences, McCall Ferry Dam. Illustrates and describes the main features and reports tests. 2000 w. Eng Rec—Dec. 7, 1912. No. 38074.

Wave Protection for Earthen Dams—Method and Costs of Placing Novel Concrete Facing on Three Dams at Uva, Wyoming. W. D'Rohan. Illustrated detailed description. 4000 w. Engng & Con—Nov. 27, 1912. No. 37926.

Methods Employed in Increasing the Height of an Earth Dam with Reservoir in Service at Greenwich, Conn. Sheldon E. Minor. From a paper before the Conn. Soc. of Civ. Engrs. Illustrates and describes the design and construction methods adopted. 1800 w. Engng & Con—Dec. 11, 1912. No. 38147.

General Method of Constructing a Rock Fill Dam 125 Ft High. Illustrates and describes the construction of a dam in Colorado, for the Pueblo Rocky Ford Irrigation Project. 1200 w. Engng & Con—Dec. 25, 1912. No. 38554.

Multi-Differential Arch Dam. Some Methods of Construction. George E. Ladshaw. Considers methods of constructing foundations, form work, etc. 1000 w. Cornell Civ Engr—Jan., 1918. No. 39394 C.

The Design and Specifications for the Arrowrock Dam, U. S. Reclamation Service. Illustrates and describes this, the highest masonry dam in the world, and interesting features of its construction. 1600 w. Eng News—Jan. 16, 1913. No. 39199.

Construction of Arched Masonry Dam at Las Vegas, New Mexico. William T. Barnes. Information concerning conditions and needs which made necessary the increase in storage of water, and Mus-

trated description of the construction of of the dam. 7500 w. Jour N Eng W-Wks Assn—Dec., 1912. No. 39531 F. Completion of the Rebuilt Assuan Dam.

Reviews briefly the history of this work, and description of the reconstruction to increase the capacity. Ills. 1200 w. Eng News—Jan. 23, 1913. No. 39371.

The Assuan Dam and Its Recent Development. Sir Hanbury Brown. Deals with the subsequent history of the dam, the work of adding to the structure so as to increase the storage capacity. Also a forecast of the benefits expected. Ills. 2500 w. Engr, Lond—Jan. 17, 1913. Serial. 1st part. No. 39483 A.

Design and Construction of Oakley Dam. Illustrated description of a 145-ft. earth dam in Idaho, built between bluffs of lava with material brought to the site by train and belt conveyors. 3000 Eng Rec—Jan. 11, 1913. No. 38952. 3000 w.

Foundation for the Hale's Bar Dam. Illustrates and describes how pneumatic caissons were used for excavating seamy rock on the Tennessee River. 1500 w.

Eng Rec—Feb. 15, 1913. No. 39865. Concrete Arched Dam Near Cheyenne, Wyoming. M. V. Moulton. Illustrated description of a reinforced concrete structure built across the north fork of Crow Creek. 2000 w. Eng Rec—Feb. 8, 1913. No. 39727.

Hydraulic Fill Dam for Additional Water Supply of Cambria Steel Works. Illustrated description of a dam built of sluiced material, flushed to place through a system of wooden flumes. 4500 w. Eng Rec—Feb. 15, 1913. No. 39863.

The Lahontan Dam, Trucker-Carson Irrigation Project, U. S. Reclamation Service. F. H. Tillinghast. Illustrated detailed description of the design and structural features, construction, etc. 8000 w. Engng & Con—Feb. 12, 1913. No. 39836.

Fremantle Graving Dock: Steel Dam Construction for North Wall. Joshua Fielden Ramsbotham. Illustrated detailed description of work in Western Australia, which had to be abandoned. 6500 w. Pro Am Soc of Civ Engrs— Feb., 1913. No. 40170 F.

Unique Construction Methods and Devices Employed at Lock and Dam No. 1, Mississippi River Improvement. General illustrated description and description of special features of the work. 2000 w. Engng & Con - March 19, 1913. No. 40728.

Dam and Embankment Failures in 1912. Myron L. Fuller. Gives a summary of the failures, discussing the types of structures and the causes of destruc-3000 w. Engng Rec-April 19,

1913. No. 41354.

Arrowrock Dam, Boise Irrigation Proct. Brief description of the highest dam in the world, now under construction in Idaho. Ills. 1000 w. Eng Rec-Feb. 22, 1918. No. 40104.

The Arrowrock Dam. Charles H. Paul. Illustrated account of the location and construction of this dam in Idaho, which will be the highest dam yet built. 4000 w. Jour of Idaho Soc of Engrs—June, 1912. No. 41723 N.

Construction of Arrowrock Dam. Illustrates and describes work on this highest masonry dam in the world. Cement is conveyed to mixer by compressed air pipe line and concrete placed by hoppers and trough suspended from cableway. 3000 w. Eng Rec—Sept. 6, 1913. No.

Excavation for the Arrowrock Dam, Charles H. Paul. General description of the work, the equipment, operations, etc. Ills. 4500 w. Eng News July 17, 1913. No. 43834.

Rockfill Diversion Dam with Concrete Core Wall, Minidoka Irrigation Project, Idaho. P. M. Fogg. Illustrated description of the dam and its construction. 1600 w. Engng & Con—April 9, 1913. No. 41196.

Improving the Des Moines Rapids. Illustrated description of the Keokuk dam across the Mississippi River, and its effects on navigation. 2500 w. Marine

Rev—April, 1913. No. 41254 C.
Making a Cut-Off Wall by Grouting
Fissured Rock, Lahontan Dam. D. W.
Cole. Illustrated description of the construction of this feature of irrigation work in Nevada. 2800 w. Eng News— April 3, 1913. No. 41064.

A Cofferdam on Sand Bottom; Ohio River Dam No. 48. J. C. Oakes. Portion of a paper in *Prof.-Mem.*, Corps of Engrs., U. S. A. Describes methods used in contracting this day and lock. in constructing this dam and lock. Ills. 3500 w. Eng News—April 10, 1913. No.

Boring and Grouting a Fissured Foundation Beneath an Embankment Dam. D. W. Cole. Illustrated description of methods used on the Lahontan dam of the Truckee-Carson project. 3000 w. Eng Rec.—March 29, 1913. No. 40956. Hearings and Arguments in the Matter

of the Application of the Rainy River Improvement Co. for Approval of Plans for a Dam at Kettle Falls. Also opinions a Dam at Rettie Fails. Also opinions filed April 18, 1913, and dissenting opinions. 3 parts. 158 pp. Int. Joint Com., Ottawa—May, 1913. No. 42498 N.

Accident at Dam 26 on the Ohio River.

Gives data related to the examination of

Dams

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the unwatered site of the dam that failed Aug. 8, 1912, taken from the report printed in the "Professional Memoirs" of the Corps of Engineers. 2500

w. Eng Rec-May 17, 1913. No. 42216.

Construction Features of Bear Creek Hydraulic-Fill Dam, Jordan River Development, Vancouver Island, British Columbia. C. E. Blee. Illustrated description of construction details. 7000 w. Engng & Con—May 21, 1913. No. 42310.

Construction of the Kachess Dam, Washington. E. H. Baldwin. Illustrated account of the construction of an earth dam 65 ft. high and 1400 ft. long. 8000 w. Eng. News-May 15, 1913. No. 42091.

Leaks in the Assouan Dam. graphs and notes in proof that the leaks are of very slight importance. 1000 w.

Engr Lond—May 2, 1913. No. 42010 A. Mississippi River High Dam at St. Paul and Minneapolis. Adolph F. Meyer. Considers the design and the amount of power that will be made available by its construction. 4000 w. Jour Assn of Engng Socs—May, 1913. No. 42439 C

Use of Hydraulic Lime for Masonry Dam. Describes work near Santa Ro-Mexico, where hydraulic lime salia, proved very satisfactory. 2000 w. Eng Rec-June 14, 1913. No. 42826.

Reinforced Concrete Hollow Dam of Buttress Type. J. K. Finch and W. F. Thoman. States the advantages of this type, describing the construction. Ills. 5500 w. Can Engr—May 29, 1913. No. 42626.

Raising the Assuan Dam. Describes methods of thickening the cross-section and increasing the height of the structure. Ills. 4000 w. Eng Rec-June 28, 1913. No. 43305.

Construction of the Spaulding Dam. Describes the design and construction of a masonry structure in California which will eventually be the highest dam in the world. Ills. 1500 w. Eng Rec—Aug. 9, 1913. No. 44239.

Experiments on Uplift Pressure in Masonry Dams. C. R. Weidner. Abstract translation of an article in Zeit. für Bauwesen, giving results of experiments in Germany to determine the uplift pres-

sure of Oester and Neye dams. Ills. 3000 w. Eng News—July 31, 1913. No. 44110. Operation of the Mohawk River Bridge Dams. D. A. Watt. Notes on the experience obtained in the operation of the 8 movable dams across the lower Mohawk River, in its canalization for the Barge Canal. Ills. 6500 w. Eng News-Aug. 14, 1913. No. 44369.
Neglected First Principles of Masonry

Dam Design. George Holmes Moore.

Deals with a few examples of various neglected first principles. 3000 w. Eng News—Sept. 4, 1913. No. 44984.

Evaporation

The Design of Masonry Dams. Editorial letters called out by the article by G. H. Moore in the issue of Sept. 4. 4000 Eng News-Sept. 25, 1913. 45491.

The Ultimate Dam. John S. Eastwood. Discusses design and construction with special reference to the Eastwood multiple-arched dam at Big Bear Valley. Ills. 2000 w. W Engng-Sept., 1913. No. 45235 C.

Construction of the Scotia Lock and Dam Across the Mohawk River, Near Schenectady, N. Y. Illustrates and dethe preliminary construction 800 w. Engng & Con—Sept. 8, scribes work. 1913. No. 44974.

Pneumatic Caissons for Scotia Dam. Explains how foundation methods used for substructures of lofty office buildings were applied to the work of the N. Y. State Barge Canal. Ills. 2500 w. Eng Rec—Aug. 30, 1913. No. 44896.

A Description of the Principal Bridge Dams in the United States and in Foreign Countries. H. G. Tyrrell. Explains the advantages and disadvantages of these structures and describes types. 4500 w. Engng & Con—Oct. 22, 1913. No. 46131.

Elephant Butte Dam. An outline of the work of constructing this storage dam across the Rio Grande, in New Mex-1200 w. Eng Rec-May 17, ico. Ills. 1913. No. 42221.

Elephant Butte Dam Construction. Louis C. Hill. Illustrates and describes the preliminary work and the construc-tion plant. 4000 w. Eng Rec-Oct. 4,

1913. No. 45671.
See also Spillways and Reservoirs, under Water Supply; Hydroelectric, under Electrical Engineering, Water Supply.

Drinking Water

A Successful Factory Drinking Water System. Walter J. Bitterlick. Description of the system. 1500 w. Ind Enging —Sept., 1913. No. 44941 C.

Edmonton, Alta.

The Water Supply of Edmonton, Alta. Describes the present system, discussing extensions necessary and the source of supply. 4000 w. Can Engr—Sept. 18, 1913. No. 45253.

Evaporation

Method of Estimating the Amount of Evaporation from Water and Soil Surfaces in the Livermore Valley of California. Information from a report of the Spring Valley Water Co. of San Francis-

co. 3000 w. Engng & Con—April 30, 1913. Serial. 1st part. No. 41823. Filtration

Some Improvements in Devices on Filtration Plants. Abstract of a paper by F. B. Leopold, read before the Cent. States W.-Wks. Assn. Diagrams and descriptions. 1800 w. Engng & Con—Nov. 13, 1912. No. 37567.

The Queen Lane Filtration Plant. S.

M. Swaab. Historical sketch of the project with a description of the construction and operation of this filter plant of the Philadelphia water supply, and an outline of the process of purification. Ills. 8500 w. Pro Engrs' Club of Phila—Oct., 1912. No. 37712 D.

Water Filtration in Minneapolis. W. Elison Fawkes. Explains conditions and gives an illustrated detailed description of the mammoth filtration plant. 4500 w. Munic Engng-Dec., 1912. No.

38645 C.

Toronto's Water Filtration Project. Discusses the problem of whether slow sand filtration or rapid mechanical filtration provides the most efficient system. Editorial and letter from T. Aird Murray. 5000 w. Can Engr—Dec. 12, 1912. No. 38272.

Uses and Abuses of Water Filtration. Gilbert H. Pratt. Explains conditions which call for filtration and what can be accomplished, and points out ways in which filtration plants are sometimes abused. Short discussion. 5500 w. Jour N Eng W-Wks Assn—Dec., 1912. No. 39530 F.

The Filtration Plant of the Montreal Water and Power Company at Montreal. Que. Illustrated description of a plant of the rapid mechanical gravity type. 1500 w. Can Engr—Jan. 23, 1913. No.

39410.

Filtration Plant at the Great Lakes Naval Training Station. Illustrated description of a slow-sand installation for purifying Lake Michigan water. 1200 w. Eng Rec—Feb. 22, 1913. No. 40102.

The Design of the Rapid Water Filtration Plant at Columbus, Ind. Philip Burgess. Paper before the Indiana San. & Water Supply Assn. Describes the conditions and details of the design. 3000 w. Engng & Con-March 5, 1913. No. 40348.

Increasing the Yield of Pittsburgh's Slow-Sand Filtration Plant. Describes the preliminary treatment of Allegheny River water by contact baffles of coarse stone and A-frame baffles across the sedimentation basin. Ills. 2800 w. Eng Rec
—April 19, 1913. No. 41357.
Purification of Water by Slow and

Rapid Sand Filtration. T. Aird Murray. Extracts from a paper before the Can. Pub. Health Asson. Inquiry into the efficiency and the conditions for which each system is adapted. 2500 w. Surveyor—April 18, 1913. Serial. 1st part. No. 41757 A.

Reports on Filtering the Croton Water-Supply. Reviews the 20-year campaign for improving the quality of the Croton supply for New York City. 10000 w. Eng News—May 22, 1913. No. 42851.

Methods of Rapid Sand Filtration. George A. Johnson. Extracts from the U. S. Geol. Survey Report, 1918. General description of the system, the cost of construction and maintenance. 5000 w. Can Engr—June 19, 1913. No. 42989.

Construction of the Grand Rapids Filtration Plant. L. D. Cutcheon. Illustrated description of a recently completed plant for purifying and softening the water supply. 3500 w. Munic Engrg—June, 1913. No. 43177 C.

Methods and Labor Cost of Constructing the 39,000,000 Gal. Mechanical Water Filtration Plant at Minneapolis, Minn. W. N. Jones. Illustrated description of

methods with summary of costs. 13500 w. Engng & Con-June 25, 1918. No.

43194.

The Design and Operation of the Minneapolis Water Filtration Plant. W. N. Jones. An account of the investigations made, describing conditions and available supplies, the filter plant finally built, and matters related. Ills. 6000 w. Engng & Con—June 11, 1913. No. 42797.

Tuning Up the Minneapolis Filter Plant. An interesting account of the initial difficulties of operation and methods employed to overcome them. Ills. 7000 w. Eng Rec—June 21, 1913. No.

Niagara Falls Filter Plant. Brief illustrated detailed description of this municipal plant. 1500 w. Munic Jour-June 26, 1913. No. 43241.

Micro-Organism Troubles and Mechan-Filters. Frederick H. Stover. Slightly condensed paper, read before the Am W-Wks Assn. Explains the general effect upon filters and methods of treatment. 3000 w. Eng Rec—July 26, 1913. No. 43934.

Filtration Plant at McKeesport, Pa. E. C. Trax. Explains why the river water is unfit for use, and illustrates and describes the filters. 2500 w. Engrg—July, 1913. No. 44034 C. Munic

Mechanial Filtration Plant at Clarksburg. H. W. Streeter. Describes details of design and gives results of operation

Filtration

and cost of filtered water. Ills. 2500 w. Eng Rec—July 5, 1913. No. 43467. Pressure Filtration Plant at Hailey-

Pressure Filtration Plant at Haileybury, Ontario. Illustrated description of the arrangement of this plant and its operation. 1500 w. Can Engr—July 3, 1913. No. 43680.

The Paterson System of Rapid Filtration. Illustrated detailed description of this rapid mechanical filter as working in the plant for the Borough of Cheltenham at Tewksbury pumping station. 3500 w. Engng—July 18, 1913. No. 43964 A.

Some Notes on the Use of Alum in Connection with Slow Sand Filtration at Washington, D. C. William Firth Wells. Explanation of the problem, with results of the treatment. 1800 w. Am W-Wks Assn—June, 1913. No. 44482 N.

Methods of Purifying Water in the Household, with Some Costs. J. H. Dunlap. Abstract of a paper read before the Iowa Engng. Soc. Discusses various types of household filters. 2500 w. Engng & Con—Aug. 27, 1913. No. 44779.

The Results of Experiments on Aeration Nozzles for the New Mechanical Water Filtration Plant at Baltimore, Md. Gives a description of experiments made to determine the proper size of nozzles, diameter and height of spray, and coefficient of discharge. 2500 w. Engng & Con—Sept. 10, 1913. No. 45062.

The Chemical and Biological Effect of Water Filtration. H. W. Cowan. Considers the organisms in earth and water

The Chemical and Biological Effect of Water Filtration. H. W. Cowan. Considers the organisms in earth and water and their functions, and the efforts to eliminate bacteria in water by filtration. 5500 w. Can Engr—Oct. 2, 1913. No. 45688.

Mechanical Gravity Filtration at Saskatoon. George T. Clark. Gives records of plant operation with respect to quantity of water filtered, chemical treatment, bacterial removal and costs, describing the plant. Ills. 2000 w. Can Engr— Oct. 2, 1913. No. 45687. Results of Mechanical Gravity Filtra-

Results of Mechanical Gravity Filtration at Saskatoon, Sask. George T. Clark. Describes the plant and gives results and cost of operation. 1500 w. Con Rec—Oct. 1, 1913. No. 45635.

The St. Louis Mechanical Water Filters. Edward E. Wall. Outlines the history of the water supply from the standpoint of quality for the last fifty years, and describes the rapid filters being built. Ills. 3000 w. Eng News—Oct. 23, 1913. No. 46158.

Water Softening and Decoloration at Grand Rapids, Mich. Walter A. Sperry. Explains obstacles which had to be overcome and the methods in present use. 1800 w. Munic Engng—Oct., 1913. No.

See also Purification, under Water Supply, and Sewage Filters, under Municipal.

Fire Protection

The Basis of Charges for Private Fire Protection and a Discussion of the Service Required. Leonard Metcalf. Abstract of a paper read before the Am. W-Wks. Assn. Discusses the general principles underlying the making of charges, and outlines conclusions. 6500 w. Engng & Co.—July 23, 1913. No. 43873.

Arguments For and Against Charges for Private Protection by Water Departments with Special Reference to Conditions at Milwaukee, Wis. Sums up the arguments for and against the establishment of schedule charges with special reference to Milwaukee conditions. 4500 w. Engng & Con—July 30, 1913. No. 44050.

Auxiliary Water Supply for the Fire Protection of San Francisco. A. J. Clean. Describes a combination of cisterns and a high-pressure pumping system drawing water from the Bay or from special reservoirs. Ills. 3000 w. Eng Rec—July 26, 1913. No. 43936.

Fire Service

High Pressure Fire Mains in Philadelphia. John E. Codman. Illustrates and describes the cast-iron pipe, its inspection, tests of joints, etc. 1500 w. Eng Rec.—Nov. 9, 1912. No. 37356.

National Standard Hose Couplings and Hydrant Fittings for Public Fire Service. F. M. Griswold. Urges the early adoption and use of a practical standard coupling for public fire service use. 5000 w. Jour Am Soc of Mech Engrs—March, 1913. No. 40436 D.

Baltimore High-Pressure Fire Service. James B. Scott. Illustrated description of the design of the high-pressure system, the pipe lines, choice of motive power, steam pumping station, and operation. 11000 w. Jour Am Soc of Mech Engrs—March, 1913. No. 40435 D.

See also Tanks, under Water Supply.

Fire Streams

The Hydraulics of Fire Streams from Small Hose and Nozzles. Virgil R. Fleming. Read before the Illinois Water Sup. Assn. Describes tests made at the University of Illinois. 2500 w. Engng & Con—April 9, 1913. No. 41198.

Fire Systems

Reasonable Requirements Imposed upon Water Systems by the Fire Protection Problem. Clarence Goldsmith. Discusses present conditions and the require-

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Ground Water

ments of the problem. Short general dis-2000 w. Jour N Eng W-Wks

Assn—Dec., 1912. No. 39528 F.

The Design of a Water System for the Boiler Feed and Fire Protection of a Modern Saw Mill. R. W. Rea. Map and description of the yard and automatic sprinkler systems installed at Winchester Liches 1500 W. France & Complex C

sprinkler systems installed at Winchester, Idaho. 1500 w. Engng & Con—Jan. 15, 1913. No. 39182.

The Design and Operation of High Pressure Fire Systems. From a paper by Clarence Goldsmith, before the Mass. State Firemen's Assn. Considers the design and operation of such systems. 4000 w. Engng & Con—Oct. 15, 1913. No. 45804 45894.

Flow

Reservoir Storage in Relation to Stream Flow. William J. E. Binnie and Also Herbert Lapworth. discussion. Shows the necessity of obtaining actual gaugings of the particular stream to be impounded before any sound estimate of reservoir storage can be made. 5500 w. Surveyor—June 27, 1913. No. 43630 A.

See also Meters, under Measurement.

Reconstruction of an American River Flume. Lewis H. Eddy. Describes repairs near Placerville, Calif. Ills. 1500 w. Eng & Mi. Jour-March 29, 1913. No. 40955.

Concrete Slab Flume Construction. S. I. Stovall. Illustrated description of work in California. 4500 w. W Engng—May, 1913. Serial. 1st part. No. —May, 1913. Serial. 1st part. 42269 C.

Flume Construction on the Medina Valley Irrigation Project. A. C. Norton. A brief description of this project and illustrated detailed description of methods used in constructing the flumes. 5000 w. Colo Sch of Mines Mag—June, 1918. No. 42987 C

See also Irrigation, under Water Supply.

Forests

Is a Forest a Storage Reservoir or a Stream Regulator? Guy Elliott Mitchell. Gives results of an investigation by the U. S. Geol. Survey of the effect of forest land on navigable streams. Ills. 1500 w. Sci Am—Dec. 28, 1912. No. 88632.

Franchises

On the Valuation of Water Works' Special Franchises. Henry de Forest Baldwin. An inquiry into the value. 12500 w. Am W-Wks Assn—June, 1913. No. 44476 N.

Great Lakes

See also Pollution and Filtration, under Water Supply.

Ground-Waters

The Development of a Ground Water Supply at La Crosse, Wisconsin. and description of the works, with special reference to the wells and the low lift pumping stations. 4500 w. & Con—Dec. 18, 1912. No. 38315.

The Action of Ground Water on the Distribution of Springs (Grondwaterbeweging in de omgeving van bronnen). A H. Borgesius. A theoretical discussion of the forces tending toward surface discharge, by comparing with the action of magnetic fields. Ills. 13000 w. De Ingenieur—Dec. 7, 1912. No. 39057 D.

Ground Water in Southern Districts (Over grondwater in het zuiden des lands). W. C. Klein. A study of geological conditions in southern Neterland. Ills. 5200 w. De Ingenieur—Dec. 21,

No. 39060 D.

Methods of Discovering and Utilizing Subterranean Streams (Les moyens de découvrir les eaux souterraines et de les utiliser). Henri Mager. Abstracts from an encyclopedic study of the subject. The geologic features included. Ills. 2000 w. Bul Soc d'Encour — Dec., 1912. No. 40062 E + F.

Groundwater Flow in the Neighborhood of Streams (Grondwaterbeweging in de nabijheid van bronnen). H. A. Lorentz. Studies on flow in porous formations near brooks. 2000 w. De Ingenieur—Jan. 11, 1913. No. 40576 D.

Determining the Direction of Underground Channels by the Natural Water Courses (La misura della portata subal-vea dei corsi d'acqua naturali). Umberto Puppini. A study of theoretical conditions in comparison with actual experiments. Ills. 4000 w. Monit Tec-Feb. 20, 1913. No. 40618 D.

The Ground-Waters. James F. Kemp. A summary and statement of present views. Considers meteoric water, the Connote waters, and magmatic waters. 10000 w. Bul Am Inst of Min Engrs—

April, 1913. No. 41662 F.
Quantitative Estimation of Ground Waters for Public Supplies. Myron L. Fuller. Outlines information as to the water-bearing capacities of various rocks and unconsolidated materials and indicates the principal steps necessary in quantitative estimating waters available. Ills. ground the waters available. Discussion. 13000 w. Jour N Eng W-Wks Assn— June, 1913. No. 43990 F.

Basic Principles of Ground Water Collection. Charles B. Burdick. A record of the principles bearing on the collection of water from sand and gravel, and how they have been applied. Ills. 4000 w.

Hygiene

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Irrigation

Am W-Wks. Assn-June, 1913. No. 44483 N.

Use and Conservation of the Underground Reservoirs of California. Charles H. Lee. Information concerning these subterranean storage reservoirs, their supply and yield, and the sources of avoidable waste. 2500 w. W Engng—Sept., 1913. No. 45236 C.

See also Drainage, under Construction.

Hygiene

The Relation of a Pure Water Supply to Chronic Intestinal Tract Infection. Nicholas S. Hill, Jr., and Leon R. Whitcomb. Condensed from a paper before the Am. Pub. Health Assn. Discusses the relation between impure water and auto-intoxication. 3000 w. Eng News—Jan. 30, 1913. No. 39594.

See also Mosquitoes, under Miscellany.

Intake Cribs
A New Design for Water-Works Intake Cribs. W. D. Barber. Outlines the features of the design of the present intake cribs on the Great Lakes and the difficulties encountered, and describes also a new design of crib, combined with submerged intakes. Ills. 5000 w. Eng News—June 19, 1913. No. 42985.

Intakes

The Design and Construction of a River Intake Pipe Line, at Fort Myer, Va, with Special Reference to the Inverted Strainer Used. Leonard S. Doten. Describes extensive improvements. 1000 w. Engng & Con-Dec. 11, 1912. No. 88145.

Methods and Costs of Constructing and Repairing Tunnel and Pipe Line Intakes in Lake Superior, for Copper Mine Stamp Mill Water Supply at Beacon Hill, Mich. Edward Koepel. Read before the L. Superior Min. Inst. Gives the history of the intakes built, including details of design and methods and cost of construction and repairs. 7000 w. Engng & Con-Feb. 26, 1913. No. 40230.

Structural Features of the New Intake Tower, Tunnel, and Screen Chamber of the St. Louis Water Department. Gives general plan of supply and illustrated description of details. 3500 w. Engng & Con—Oct. 29, 1913. No. 46384.

Irrigation

Conference of Irrigation Managers at Bozeman, Montana. Report of matters discussed at the conference and the conditions of modern systems. 3000 Eng News—Nov. 7, 1912. No. 37319.

Increasing the Duty of Water. B. A. Etcheverry. Read before the Nat. Irrigation Cong. Discusses losses which produce a low duty, estimating them at 76 per cent of the supply, and methods of

conservation. 4500 2, 1912. No. 37224. 4500 w. Eng Rec-Nov.

Maintaining Irrigation Canals Subject to Heavy Deposits of Silt. J. C. Allison. Special machinery and methods employed in the Imperial Valley, Caifornia, are illustrated and described. 2000 w. Eng Rec—Nov. 16, 1912. No. 37584. \$3,500,000 for Irrigation. M. D. Hen-

derson. Information concerning a mammoth Pearson project on the Texas plains. 1800 w. Mfrs' Rec—Nov. 14, plains. 1800 w. 1912. No. 37554.

U. S. Irrigation Work in the Northwest. Robert Fletcher. Notes on the remarkable accomplishments of the U.S. Reclamation Service. Ills. 9500 w. Eng News—Nov. 14, 1912. No. 37590. Electricity and Spray Irrigation. Put-

nam A. Bates. Brief illustrated description of the raising of water by electric

pumps to produce artificial rain. 1200 w. Sci Am—Nov. 2, 1912. No. 37158.

Land Values in Egypt. Sir Hanbury Brown. Reviews the benefits resulting from irrigation and the great increase in the value of the land. 2000 w. Engr.

Lond—Nov. 1, 1912. No. 37550 A. Irrigation. H. M. Goodman. Detailed discussion of irrigation investigations and work, with references to the Dominion Government irrigation belt in Saskatchewan. Ills. 6500 w. Ap Sci-Nov., 1912. No. 38284 C.

Operation and Maintenance of Irrigation Systems. F. H. Newell. Abstract of a paper read before the 20th Nat. Irrigation Cong. Review of progress since 1902, with suggestions. 3500 w. Eng Rec—Nov. 30, 1912. No. 37967.

Irrigation Project on the Price River in Eastern Utah. Brief illustrated description of the work. 2000 w. Eng Rec— Dec. 28, 1912. No. 38578.

Designs for Irrigation Structures. The present number gives plan and description of an outlet gate for the Alfred Davis reservoir of the Turlock Irrigation District, in California. 700 w. Engng & Con—Dec. 25, 1912. Serial. 1st part. No. 38555.

Prewitt Reservoir Project. Illustrated description of work in Colorado involving a diversion dam with a new type of movable flashboard supports and a 31/2 mile protected embankment. 3000 w. Eng Rec—Dec. 28, 1912. No. 38572.

Construction Methods on the Medina Valley Irrigation Project, Texas. C. H. Kearny. Illustrated account of rapid progress in building two concrete dams and extensive flumes. 2500 w. Eng Rec —Dec. 7, 1912. No. 38076.

Irrigation in Java (Irrigatio op Java). R. A. van Sandick. Outlines some of the main systems, and brief description of special features. Ills. 6500 w. De Ingenieur—Nov 16, 1912. No. 38476 D.

Gibbs' Module for Irrigation Works. Explains the requirements and illustrates and describes a new type intended meet the conditions. 1200 w. Eng

Jan. 17, 1913. No. 39477 A.

Seasonal Duty of Irrigation Water. F. W. Hanna. Gives conclusions based on observations made in the Boise Valley, 3000 w. Eng Rec-Jan. 25, 1913. Idaho. No. 39366.

On the Measurement and Division of Water. L. G. Carpenter. Describes some methods adapted to the use of small ditches and laterals and also methods for large ditches. Especially explains the use of the weir. 18500 w. Colo Agri College, Bul. 150 - June, 1911. 39510 Ń.

Egyptian Irrigation and the Assouan An illustrated account of what has been accomplished under British influence, with a review of the early conditions. Ills. and Plates. 11000 Engng—Dec. 20, 1912. No. 38889 A.

Irrigation Pumping in Southern Idaho. E. A. Wilcox. Illustrates and describes several pumping installations, giving suggestions regarding equipment, maintenance and operation. 2500 w. Elec Elec Rev & W Elect'n-Jan. 25, 1913. No. 39418.

Ten Years of Government Irrigation Work. Review of the activities of the U. S. Reclamation Service since the passage of the Newlands Act. 3500 w. Eng Rec-Feb. 1, 1913. No. 39647.

Irrigation in the Sudan. Percy Martin. Maps and description of this great work, the difficulties and present progress. 2800 w. Engr, Lond—Jan. 31, 1913. Serial, 1st part. No. 39813 A.

Duty of Water for Irrigation. On the amount and character of water losses as determined by extensive studies in Idaho. 3000 w. Eng Rec-March 15, 1913. No.

Irrigation Surveys and Water Powers. Information from a recent report concerning work in progress in Alberta and Saskatchewan. 2500 w. Can Engr— March 20, 1913. No. 40785.

The Reclamation of Ancient Babylonia by Irrigation. Edgar J. Banks. An account of proposed reclamation at a cost of \$60,000,000. Ills. 1700 w. Eng News— March 6, 1913. No. 40355. Twin Falls—Oakley Irrigation Project. A. M. Korsmo. Illustrated description of

the Carey Act irrigation project in south-

ern Idaho; especially the construction of the main dam. 3500 w. Eng News-March 13, 1913. No. 40657.

Irrigation on the Wind River Indian Reservation. A. P. Poorman. Describes projects in Wyoming, giving costs. 2500 w. Indiana Engng Soc — 1912. No. 41741 N.

Drainage of Irrigated Lands on the Minidoka Project, Idaho. Percival M. Fogg. Explains this drainage problem, as it has developed and is being solved. 5500 w. Jour of Idaho Soc of Engrs-

June, 1912. No. 41728 N.
Minidoka Power & Pumping System. Barry Dibble. Illustrated description of the largest pumping system that has been undertaken. 3000 w. Jour of Idaho Soc of Engrs—June, 1912. No. 41725 N.

Methods and Devices for Measuring Water for Irrigation. Albert Eugene Wright. Explains methods of irrigation measurements and the devices used. 5000 w. Engng & Con—May 21, 1913. No. 42309.

Porto Rico Irrigation Service. W. L. Squire and F. H. Knapp. Map and detailed description of the project. 6500 Cornell Civ Engr-May, 1913. No. 42437 C.

Reinforced-Concrete Chutes on Boise Project. F. W. Hanna. Describes the design, construction and operation of five of the larger of the open chutes. Ills. 2000 w. Eng Rec—May 3, 1913. No. 41849.

What Is the Matter With Irrigation? Editorial discussion of why irrigation is unprofitable. 3000 w. Eng News-June 12, 1913. No. 42814.

Irrigation Works in India. Sir John Benton. An account of the State irrigations works in India, those now in operation and those under construction. 18500 w. Jour Soc of Arts—June 13, 1913. No. 43130 A.

The Storage of Flood Waters for Irrigation. A study of the supply available from Southern California streams. A. M. Strong. Map and diagrams. 3500 w. Pro Am Soc of Civ Engrs—May, 1913. No. 42907 F.

Concrete Pipe and Overflow Basins for Distributing Irrigation Water. Eugene C. Mills. Illustrates and describes details of the system used on the Sacramento Valley project. 2500 w. Eng Rec June 14, 1913. No. 42828.

Construction of Irrigation Canal Systems From an Operation Standpoint. P. M. Fogg. Calls attention to features deserving attention during the construction. 1500 w. W Engng—June, 1913. No. 4318**9** C.

WATER SUPPLY

Maine

Irrigation in Egypt and the Nile River Dams (L'irrigazione in Egitto e le dighe sul Nilo). Luigi Luiggi. General notes on Egyptian practice; the Assuan dam and its anticipated results. Ills. 6000 w. Ann della Soc d Ing e d Arch Ital— May 16, 1913. No. 43091 E.

Irrigation in the Plains of Konia in Asia Minor (De irrigatiewerken in de vlakte von Konia in Klein-Azië). R. G. Hoeffelman. A detailed study of the customs employed in ancient and modern times. Ills. Serial, 1st part. 19000 w. De Ingenieur—June 28, 1913. No. 43550 D.

The Cost of Reclamation Service and Other Irrigation Projects in Colorado. John E. Field. Criticism of recently published articles supposedly based on information furnished by the U.S. Reclamation Service. Also reply by F. H. New-ell. 8500 w. Eng News-Aug. 21, 1913. No. 44574.

Irrigation and River Control in the Colorado River Delta. Continued discussion of H. T. Cory's paper. 16500 w. Pro Am Soc of Civ Engrs-Aug., 1913. No. 44789 F.

Irrigation of Santa Cruz Valley. M. C. Hinderlider. Illustrated account of the recovery of underground water in Arizona by wells and pumps. 3000 w. Eng Rec-Aug. 23, 1913. Serial, 1st part.

Irrigation Project of the Sacramento Valley Irrigation Company. Illustrates and describes the Head Gate plant, one of the largest electrically driven irrigation plants in California. 1800 w. W Engng—Aug., 1913. No. 44386 C.

The Storage of Flood-Waters for Irrigation; A Study of the Supply Avaliable from Southern California Streams. Discussion of the paper by A. M. Strong. 1200 w. Pro Am Soc of Civ Engrs— Sept., 1913. No. 45526 F.

Irrigation and River Control in the Colorado River Delta. Continued discussion of H. T. Cory's paper. 5000 w. Pro Am Soc of Civ Engrs-Sept., 1913. No. 45522 F.

A Study of Irrigation Heads in the Modesto and Turlock Irrigation Districts, California. Statements from a report by P. C. Berkefeldt on a study of actual practice. 2500 w. Eng News-Sept. 11, 1913. No. 45071.

Irrigation in Oregon. John H. Lewis. Read before the W. Can. Irr. Assn. Explains the need of irrigation and the value of water; the water laws, administrative problems, and the work the State is attempting. 3000 w. Can Engr—Sept. 11, 1913. No. 45126.

Rapid Construction on Medina Valley rigation Project in Texas. Terrell Irrigation Project in Texas. Bartlett. Mainly an illustrated account of the construction of a concrete dam of large size in the short time of one year. 2500 w. Eng News-Sept. 11, 1913. No. 45073.

The Relative Efficiency of Talus Slopes and Forests in Conserving Snow for Irrigation. J. E. Church, Jr. Gives a letter from G. L. Shumway, discussing points brought forward. 3000 w. Engng & Con—Oct. 15, 1913. No. 45898.

Main Canal of Medina Irrigation Project. Illustrated description of two river crossings effected by reinforced-concrete inverted siphons, and a drop made by concrete-lined chute. 2000 w. Eng Rec—Oct. 18, 1913. No. 45939.

See also Laboratories, under Measure-ment; Dams, Pipe Lines and Snow Conservation, under Water Supply, and Colorado River, under Waterways and Harbors.

Jersey Island
Water Supply of Jersey. Alfred J. Jenkins. Read before the Inst. of W-Wks. Engrs. Illustrated description of the supply on this island, having a population of 52,000. 2500 w. Surveyor—June 13, 1913. No. 43135 A.

Leicester, Eng.

Leicester Water Supply from the Derwent Valley. Details, drawings, illustrations and descriptions of this work. 2000 w. Engr, Lond—Dec. 20, 1912. No. 38897 A.

Leptomitus

Leptomitus in Drinking Water. ert C. Sweetser. Gives experience of a town in Massachusetts, and also in other places. Discussion. 3500 w. Jour N Eng W-Wks Assn—June, 1913. No. 43991 F.

Log Flumes

The Design of Log Flumes. J. P. Discusses engineering princi-Martin. ples involved in fluming. Showing that with the aid of diagrams the feasibility of fluming can be determined in a general way. 4000 w. Eng News—Nov. 14, 1912. No. 37592.

Los Angeles

See Aqueducts, under Water Supply.

River Crossings for Water Mains at Fort William. Drawings and description of the shaft and tunnel system made necessary to increase the water supply. 1000 w. Can Engr-Aug. 14, 1913. No. 44397.

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Pipe Flow

Meters

Characteristics of Cup and Screw Current Meters, Performance of These Meters in Tail-Races and Large Mountain Streams; Statistical Synthesis of Discharge Curves. B. F. Groat. Gives Conclusions drawn from tests. 7000 w. Pro Am Soc of Civ Engrs-Dec., 1912. 39288 F.

Selling Water by Current Meter Measurement. J. C. Allison. Map and description of the irrigation system of the California Development Co., relating the silt and other difficulties, and describing the use of current meters for water measurements, and the current meter rating flume at Calexico. 4000 w. Eng News Jan. 9, 1913. No. 38949.

An Argument for Water Meters in Chicago from the Standpoint of the Individual Householder. T. C. Phillips. 1500 w. Engng & Con—Jan. 1, 1913. No. 38770.

Characteristics of Cup and Screw Current Meters, Performance of These Meters in Tail Races and Large Moun-tain Streams; Statistical Synthesis of Performance of These Discharge Curves. Discussion of the paper by B. F. Groat. 4500 w. Pro Am Soc of Civ Engrs — Feb., 1913. No. 40173 F.

The Results Accomplished in Kalamazoo, Michigan, by the Installation of Water Meters, with Special Reference to "Steals" from Fire Sprinkler Lines. 2000 w. Engng & Con—Feb. 5, 1913. No. 39700.

Water Meters in St. Louis. Discusses special features of different makes; deposits in meters and preventing and removing them, and related subjects. Ills. 3000 w. Munic Jour-Sept. 18, 1913. No. 45244.

See also Stream Flow, under Water Supply.

New Jersey Rules

See same heading, under Municipal.

Ottawa Water Supply Project. Brief descriptions of the possible sources of supply, with extracts from the report of Sir Alex. Binnie. 4500 w. Can Engr—Oct. 16, 1913. No. 45955.

Panama Water Supply and Purification System. Arthur T. Nabstedt. Reviews the peculiar problems, the effect of tropical conditions, describing the purification works. Ills. 4500 w. Eng News—Oct. 2, 1913. No. 45650.

The Water Supply of Paris. Explanation of the supply, with bacteriological analyses. 1000 w. Engng—Aug. 15. 1913. No. 44727 A.

Philippines Gravity Water Supply at the City of Manila, Philippine Islands. H. E. Keeler. An interesting account of the early and

present water supply systems, and brief reference to the excellent sewer system. 2000 w. Am W-Wks Assn—June, 1918. No. 44480 N.

See Reinforced Concrete, under Materials of Construction.

Pipe Cleaning

Cleaning Cincinnati Water Mains. A. Hiller. Illustrates and describes methods and results, giving cost. 1500 w. Munic Jour—Nov. 28, 1912. No. 37935.

Pipe Corrosion

Mill Scale as a Cause of the Pitting of Steel Pipes. George C. Whipple and Melville C. Whipple. Condensed from a paper read before the Int. Chem. Cong. Reports investigations and states con-4500 w. Eng News-Nov. 7, clusions.

1912. No. 87817.
Mill Scale as a Cause of the Pitting of Steel Pipes. George C. Whipple and Mel-ville C. Whipple. Abstract of paper before the Int. Chem. Cong. Gives results of investigations and conclusions. 4000 Mech. Engr—Dec. 13, 1912. No. 38895. A

See Corrosion, under ELECTRICAL ENGI-

NEEERING, Electro-Chemistry.

Pipe Flow

Experimental Determination of Loss of Head Due to Sudden Enlargement in Circular Pipes. W. H. Archer. A summary of experimental data and computations obtained in a series of tests to determine the loss of hydraulic head due to sudden 4000 w. enlargement in cross-section. Pro Am Soc of Civ Engrs-March, 1918. No. 41312 F.

Studies of Coefficient of Friction in Reinforced-Concrete Pipe, Umatilla Project, Oregon. Herbert D. Newell. Reports results of some of these pipe lines in service, giving experiments made to determine the coefficient of friction. 1500 w.

Eng News—May 1, 1913. No. 41864. Experiments on Stream Action in Broadened and Narrowed Channels (Versuche über die Strömungsvorgänge in erweiterten und Kanälen) verengten Heinrich Hochschild. Exhaustive studies on flow action in pipes, etc. Ills. 4500 Zeit des Ver deutscher Ing-April 26, 1913. No. 42144 D.

A Mechanism for Metering and Recording the Flow of Fluids Through Venturi Tubes, Orifices, or Conduits by Integrating the Velocity Head. J. W. Ledoux. Considers briefly the fundamental principles of the subject and de-

Pipe Freezing

WATER SUPPLY

Pollution

scribes a form of meter register. Ills. 4500 w. Pro Am Soc of Civ Engrs— May, 1913. No. 42911 F.

See also Fire Streams, under Water Supply.

Pipe Freezing

Electrical Device for Thawing Out
Frozen Water Pipes. Charles P. Hoover. Illustrated description of a portable outfit used in Columbus, O. 1500 w. Eng Rec Feb. 22, 1913. No. 40105.

Pipe Laying

Methods of Laying and Repairing a 30-in. Submerged Water Main at Bridgeport, Conn. From a paper by Fred. S. Wardwell read before the Conn. Soc. of Civ. Engrs. Diagrams and description. Engng & Con-Nov. 27, 1912. 900 w. No 87922.

Pipe Lines

The Horsepower of a Pipe Line. R. S. Bayard. A study of the relation between static and friction head, flow and velocity. 2000 w. Power—Dec. 31, 1912. 38696.

New 60 Inch Water Supply Conduit at Denver. Illustrated description of a long steel and wood stave pipe line provided with special angle wells instead of short radius curves. 1800 w. Eng Rec.—Jan. 18, 1913. No. 39186.

Experience with Wood-Stave Pipe in Irrigation. Gives experience on the Ya-

kima project, in Washington, reporting on both wire-wound and banded pipe. 3500 w. Eng News-Feb. 6, 1913. 39707.

Nisqually River Pipe-Line Bridge. Illustrated description of the design and erection at La Grande, Washington, of a 200-ft. span arch carrying a 10-ft. waterpower main. 1500 w. Eng Rec—March 22, 1913. No. 40767.

Pipe Obstructions

Animal Growth in Water Pipes. Samuel C. Chapman. Information concerning the organisms often found troublesome. 4000 w. Engr, Lond-June 20, 1913. No. 43396 A.

Pipe Protection

Protecting Vent Pipes from Frost. James Smith. Explains a scheme devised to protect soil pipe outlets from being closed by frost in cold climates. Ills. 1500 w. Met Work-Nov. 15, 1912. No. 37555.

Pipes

Cost of Constructing by Contract Water Pipe Extensions Aggregating 17.7 Miles in Chicago in 1912. 12800 w. En-

gng & Con—May 14, 1913. No. 42089.
The Theory of Loads on Pipes in Ditches and Tests of Cement and Clay Drain Tile and Sewer Pipe. A. Marston

and A. O. Anderson. Ills. 181 pp. Bul No. 31, Iowa State College of Agri and Mech Arts—Feb., 1913. No. 43757 N. Insulation of Joints in Pipe Lines.

William R. Conard. Describes the laying of pipe in an endeavor to get a line as nearly proof as possible against electrolytic action. Ills. Discussion. 1000 w. Jour N Eng W-Wks Assn—June, 1918. No. 43989 F.

The Economics of Pipe Line Diameters. C. W. Harris, in Pro. of the Pacific N-W. Soc. of Engrs. Discusses a method for determining economical pipe line con-struction. 3500 w. Engng & Con-

Aug. 27, 1913. No. 44776.

The Theory of Bends in Pipes and Canals (Zur Theorie der Rohr- und Kanal-Krummer). Richard Grammel. A study of the flow of liquids around bends, with theoretical sections. Ills. Serial, 1st part. 2400 w. Zeit f d ges Turbinenwesen—July 30, 1913. No. 44670 D.

Pitot Tube

See same heading under Measurement. Plumbing

The Plumbing in the New Post Office at Jersey City, N. J. Harold L. Alt. Illustrated detailed description. 2500 w. Dom Engng—Nov. 2, 1912. No. 37258.

The Effect of Intercepting Traps in House Drainage. Edward Willis. Discussion of the intercepting trap.

cusses the origin of the intercepting trap, its disadvantages and advantages. eral discussion. 5000 w. Surveyor-Dec. 13, 1912. No. 88898. A.

Sanitary Equipment of a Loft Building. Illustrates and describes methods of installing a complicated system of piping in a tall building with small ground area. 1800 w. Met Work—Jan. 17, 1913. No. 39206.

Plumbing in Greenpoint Hospital, Brooklyn. Illustrates and describes an example of modern methods. 3500 w. Dom Engng—Feb. 22, 1913. No. 39993.

Plumbing in Hotel Statler, Cleveland.
Illustrated description of sanitary equip-

ment requiring over 3,000 plumbing fixtures. 2500 w. Met Work-June 13, 1913. No. 42794.

Plumbing in Milwaukee Savings Bank. Illustrates and describes the sanitary conveniences, drainage system for rain water and wastes from fixtures. w. Met Work—July 18, 1913. 1200 No. 43768.

Pollution

Conference on Pollution of Lakes and Waterways. A number of short papers read at a joint meeting at Cleveland, Ohio. 5000 w. Eng Rec.—Nov. 2, 1912. No. 37222.

Some Recent Examples of the Pollution of Public Water Supplies. John C. Thresh. Read before the Inst. of Water Engrs. Explains some causes of contamination. 3500 w. Surveyor—Dec. 20, 1912. No. 38874 A.

Sanitary Protection of the Water Supplies Taken from the Great Lakes. George C. Whipple. Read at the Int. Cong. of Ap. Chem. Shows the effect of contaminated lake water on the public health and the ways in which the problem may be solved under different local conditions. Also discussion. 14000 w. Pro Engrs' Club of Phila—Jan., 1913. No. 39961 D.

Studies of Fish Life and Water Pollution. H. W. Clark and George O. Adams. Read before the Int. Cong. of Ap. Chem. Discusses results of investigations made at the Lawrence Experiment Station. 3000 w. Eng News—Feb. 13, 1913. No. 39860.

Studies of Fish Life and Water Pollution. H. W. Clark and George O. Adams. Extracts from a paper read at the Cong. of Ap. Chem. A report of experiments at the Lawrence Experiment Station. 2500 w. Surveyor—May 30, 1913. No. 42771 A.

The Chemical Measure of Stream Pollution and Specification for Sewage Effluents. Earle B. Phelps. Proposed formula for use in investigation of pollution and comparison of calculated and actual percentages. 5000 w. Am Jour Pub Health—June, 1913. No. 44001 C.

Practical and Just Legislation Relating to Stream Pollution. Charles Saville. Suggestions for boards of control based upon the principles of the Emscher Federation in Germany. 6000 w. Am Jour Pub Health—June, 1918. No. 44004 C.

Chemical and Bacterial Condition of Rivers Above and Below the Sewage Effluent Outfall. J. E. Purvis and A. E. Rayner. From a paper read at the Exeter. Cong. of the Roy. San. Inst. Reports investigations of Cam River. 1200 w. Surveyor—Aug. 15, 1913. No. 44717 A.

How a Public Water Supply Was Polluted by a Private Fire Service—and the Consequences. R. J. Thomas. An account of an occurrence at Lowell, Mass., in July, 1903. 1600 w. Am W-Wks Assn—June, 1913. No. 44481 N.

See also Sanitation, under Water Supply.

Preliminaries

A Discussion of Some Common Faults in the Engineering Preliminaries for Water Power and Water Supply Developments. Robert E. Horton. From a paper before the Mich. Eng. Soc. A statement of some common faults in the engineering preliminaries for projects of the class named. 2500 w. Engng & Con—Feb. 5, 1913. No. 39704.

Public Baths

Water Supply for Public Baths. C. J. Yorath. Describes a scheme where a supply of water was obtained by sinking a deep well for baths in London. Ills. 2500 w. Engr, Lond—April 18, 1913. No. 41774 A.

Pumping Plants.

Practical Methods for Obtaining High Efficiency in Water Works Pumping Plants. From a paper by Seabury G. Pollard, read before the Ill. Water Sup. Assn. Outlines methods of obtaining high efficiency in the operation of such plants. 3500 w. Engng & Con—March 19, 1913. No. 40732.

Economy Factors in Power and Pumping Plants. Charles Brossmann. Discusses faults and the factors affecting the economy in the operation of plants. 3000 w. Indiana Engng Soc—1912. No. 41740 N.

Economical Operating Methods and the Study of Economies in Water Works Pumping Plants. From a paper by C. H. Benjamin before the Indiana San. & Water Sup. Assn. A study of possible economies and preventable losses. 1700 w. Engng & Con—April 23, 1913. No. 41591.

Pumping Stations

New Diesel-Driven Pumping Installation at Rugby Water-Works. R. A. Pfleiderer. Read before the Rugby Engng. Soc. Gives a brief description of the general system of water supply and discusses the new pumping installation. Ills. 5500 w. Mech. Engr—Dec. 20, 1912. No. 38883 A.

Efficiency in the Pumping Station. Seabury G. Pollard. Brief consideration of operating standards, structural defects, etc. 2000 w. Munic Engng—May, 1913. No. 42414 C.

Municipal Pumping Plants. F. Noel Taylor. Discusses the general arrangement of the plant, information required when designing a station, economical maintenance, &c. 1500 w. Prac Engr—June 12, 1913. Serial. 1st part. No. 43133 A.

Lazwell Drainage Pumping Plant. Illustrated description of a plant used to drain an area of about fifty thousand acres of swamp land. 1200 w. Power—June 17, 1913. No. 42860.

The Pumping Station of Old Emscher ("Pumpwerk Alte Emscher") Ernst Mautner. A description of the circular

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reinforced concrete building located in the bed of the reservoir. Ills. Serial. 1st part. 2400 w. Beton u Eisen-May 7, 1913. No. 43020 E.

Data on the Cost of Pumping in Water Works Steam Pumping Stations. Kenneth F. Lees. Read before the Conn. Soc. of Civ. Engrs. Discussion, with data, on

the cost of pumping water in steam plants. 1700 w. Engng & Con—Aug. 27, 1913. No. 44778.

Power for Pumping Derived from Refuse. E. H. Foster. Considers briefly the different methods of disposing of city waste, favoring the mixed collection. Ills. 1000 w. Am W-Wks Assn—June, 1913. No. 44479 N.

Details of an Automatic Pumping Station at Farmington, Mich. A. R. Cary. Read before the Mich. section of the Nat. Elec. Lgt. Assn. Brief description. 1200 w. Elec Rev & W Elect'n—Aug. 23, 1913. No. 44558.

Comparative Economy of Producer Gas and Steam for Pumping Stations. Gives unit costs derived from records covering 5 years' operation at two plants. 2500 w. Eng Rec—Sept. 6, 1913. No. 44995. Purification

A Discussion of the Vagaries of Present Specifications Governing the Purchase of Lime for Water Purification—Recommended Clauses. From a paper by W. F. Monfort, before the Cent. States W.-Wks. Ass'n. Calls attention to essential facts governing lime purchases. 2500 w. Engng & Con—Nov. 13, 1912. No. 37566.

Standards of Purity for Rivers and Waterways. Report of a Committee of the Nat. Assn. for Preventing the Pollution of Rivers and Waterways. 1800 Eng News-Oct. 31, 1912. 87212.

Water Purification and Its Application to Industrial Uses H. Royal-Dawson. Discusses conditions required for drinking water, for industrial purposes, and methods of purification. 3500 w. Chem Engr.—Nov., 1912. No. 37918 C.

Water Purification for the Rotterdam Water Supply (De waterzuivering door het waterwerk der gemeente Rotterdam). A. H. van Delden. Showing results of microscopic bacteria tests before and after filtration. Ills. 6500 w. De Ingenieur—Nov. 30, 1912. No. 38478 D.

Experiments on Water Purification. Notes from a recent report of the Massa-chusetts State Board of Health describing work during 1911 with several different methods of filtration. 4500 w. Eng Rec No. 38960. -Jan. 11, 1913.

Recent Advances in the Science of Water Purification. Adolph Kemna. Read before the Inst. of Water Engrs. Discusses some of the latest methods of purification. 6000 w. Surveyor-Dec. 27, 1912. No. 38876 A.

Purification

Use of Chloride of Lime with Pressure liters. Francis D. West. Reports ex-Filters. perience at Philadelphia in purifying a water subject to sudden variations in character. Ills. 2000 w. Eng Rec—Jan. 18, 1913. No. 39187.

18, 1913. No. 39187. Water Purification at Philadelphia during 1911. Information from the annual report of Fred C. Dunlap. 2500 w. Eng Rec-Jan. 25, 1913. No. 39367.

Lawrence Experiment Station Studies in the Purification of Water. Gives results of experimental work during 1911. 4800 Engng & Con—Jan. 8, 1913. 38938

Modern Methods of Water Purification. John C. Thresh. Read before the Inst. of Munic. & Co. Engrs. Examines the various processes in use, giving results of investigations, including ultra-violet rays. 5000 w. Surveyor—Feb. 14, 1918.

Different Kinds of Clarifying Plants (Die verschiedenen Arten von Kläranlagen). Herr Berkenkamp. Brief outlines of small water purifying plants available for use in mining camps, with approximate costs. 2100 w. Glückauf—Jan 11, 1913. No. 40012 D.

A Discussion of the Problems Connected with the Effort to Establish Standards for the Hygienic Purity of Public Water Supplies. Joseph W. Ellms. Paper before the Indiana San. & Water Supply Assn. 1800 w. Engng & Con-March 5, 1913.

The Present Condition of Small Water Purification Plants in Illinois-Faults in Design and Operation. Ralph Hilscher. Read before the Ill. Water Sup. Assn. Describes the present condition of small water filtration plants, discussing their faults of design and operation. 1600 w. Engng & Con—March 19, 1913. 40730.

Purifying Water by Sedimentation and Filtration. Edward K. Hammond. Describes the method used in the plant at New Milford, N. J. Ills. 2500 w. Chem Engr-March, 1913. No. 40925 C.

The Absorption of Oxygen by Deaerated Water. Earl B. Phelps. A discussion of a report by Dr. W. E. Adeney on the subject of re-aeration of polluted tidal waters. 4500 w. Pro Am Soc of Civ Engrs—March, 1913. No. 41310 F.

Conditions of Small Water Purification Plants in Illinois Ralph Hilscher

tion Plants in Illinois. Ralph Hilscher.

Abstract of a paper read before the Ill. Water Sup. Assn. Discusses faults of these plants. 1500 w. Eng News—April 10. 1913. No. 41161.

10, 1913. No. 41161.

The Biological Purification of Waste Waters by the "Perfect Septic Tank" (L'épuration biologique des eaux usées par la "fosse septique complétée"). F. Bussière. Principles of biological purification and detailed description of design and action of "La fosse septique complétée," and its application. Ills. 3500 w. Genie Civil — April 12, 1913. No. 41530 D.

The Efficiency of Coagulating Basins. W. F. Monfort. Read before the Illinois Water Sup. Assn. Description of the St. Louis installation and its working. 4000 w. Can Engr—May 8, 1913. No. 41969.

Report on the Application of Ozone to Water Purification. Russel Spaulding. An account of the results obtained in French, German and Russian installations where rivers are used as the source of water supply. Ills. 6000 w. N. Y. State Dept. of Health. 43019 N.

An Example of the Purchase Under Specifications of Chemicals for Use in Water Purification. Gives the substance of a form of contract and specifications prepared by the Columbus, O., Water Department 1600 w. Engng & Con—July 23, 1913. No. 43872.

Dry Feed for Chemicals Used in Water Purification. Allen Hazen. Explains the advantages of dry feed and describes an apparatus designed by the author for applying pulverized alum and hypochlorite to water by means of a screw conveyor driven by a small water wheel. Ills. 1200 w. Eng Rec—July 19, 1913. No. 43788.

Storing Lime for Water Softening. Charles P. Hoover and C. J. Clarke. Illustrated description of the new bins and weighing apparatus at the Columbus water purification works. 2500 w. Eng Rec.—July 5, 1913. No. 43468.

The Absorption of Oxygen by Deaerated Water. Discussion of the paper by Earle B. Phelps. 3000 w. Pro Am Soc of Civ Engrs—Aug., 1913. No. 44792 F.

Pure and Wholesome Water. George A. Johnson. Deals with the composition of water, the value of sanitary water analysis, temperature, turbidity, color, hardness, physical features, bacteria, standard of purity, &c. 11000 w. Am W-Wks Assn—June, 1913. No. 44474 N.

Eliminating Hypochlorite Tastes. From a paper by Dr. Arthur Lederer and Frank Bachmann, read before Ill. Water Sup. Assn. Considers the effect of storage and aeration, neutralization with sodium sulphite and thiosulphate. 1600 w. Munic Jour—Aug. 21, 1913. No. 44536.

The Bacteria Count on Gelatin and Agar Media and Its Value in Controlling the Operation of Water Purification Plants. James M. Caird. Reports special investigations at several purification plants to learn the comparative results of the gelatin and agar media. 3000 w. Am W-Wks Assn—June, 1913. No. 44478 N.

See also Filtration, and Sterilization, under Water Supply.

Rate

A Study Made to Determine Equitable Water Rates for the City of St. Louis, Mo. A study of equitable rate determination, prepared by Edward E. Wall, and published as part of a report to the Board of Public Improvements. 5000 w. Engng & Con—May 28, 1913. No. 42517.

Rates and Rate-Making Under Wisconsin Public Utility Law. Halford Erickson. Abstract of paper read before the Am W-Wks Assn. Outlines the cost method of rate-making. 2500 w. Eng Rec—

od of rate-making. 2500 w. Eng Rec—July 12, 1913. No. 43658.

Some Features of Engineering Appraisement of Water Works Properties, with Special Reference to the Appraisements for Rate Readjustment at Chillicothe, O., and Texarkana, Ark., and Texas. Phillip Burgess. Read before the Central States W-Wks. Assn. Deals chiefly with some features incident to the appraisements. 3500 w. Engng & Con—Sept. 3, 1918. No. 44973.

Reforestation

The Proposed Reforestation of the Cedar River Watershed, Seattle Water-Supply. Based on a report by R. H. Ober and H. C. Johnson. Illustrated description of the watershed and Cedar Lake, and the proposition of reforesting. 3500 w. Eng News—Sept. 4, 1913. No. 44987.

Proposed Methods and Estimated Unit Costs of Reforesting the Cedar River Watershed of the Seattle Water Works. A study of costs with conclusions. 6000 w. Engng & Con—Oct. 22, 1913. No. 46132.

Reservoir Cleaning

Cleaning a Large Settling Reservoir. Joseph W. Ellms. Illustrates and describes methods of flushing out with streams from hose, three and one-half years' accumulation of mud. 3000 w. Eng Rec—June 21, 1913. No. 43110.

Reservoir Failure

Failure of the City Reservoir Wall, Nashville, Tenn. Howard M. Jones. Il-

WATER SUPPLY Reservoirs

lustrated account of the failure that occurred at midnight, Nov. 4, 1912. 1800 w. Eng News—Nov. 14, 1912. No. 37594.

Reservoirs

New Reinforced Concrete Reservoir at Council Bluffs. Brief illustrated description of a 8-compartment, 8,000,000-gal. settling reservoir with sloping floors. 1500 w. Eng Rec—Jan. 11, 1913. No. 88955.

The Design of the 5,000,000-gal. Reinforced Concrete Water Works Reservoir for La Crosse, Wis. Describes and illustrates the principal features, and gives a summary of the discussion of the economies of water storage. 2500 w. & Con-Jan. 1, 1913. No. 38771.

Partial Failure of Reservoir Lining, Johnson City, Tenn. D. R. Beeson. Illustrated account of the failure of a concrete lining on Jan. 10, allowing the contents of the reservoir to escape. 1200 w. Eng News—Jan. 30, 1913. No. 39596. Covered Concrete Reservoir at Lowell,

Mass. Illustrated description. 1600 w.

Eng Rec—Feb. 15, 1913. No. 39867.

Design for Increasing Depth of Brick
Reservoir by Means of Reinforced Concrete, and Design of New Circular, Open, Reinforced Concrete Reservoir for Sioux City, Iowa. Explains conditions and describes the proposed enlargement. Ills. 2000 w. Engng & Con—Feb. 12, 1913. No. 39832.

How to Repair the Nashville Masonry Reservoir. From report by Rudolph Hering, dealing with the proposed repair to the reservoir, which failed Nov. 4, 1912. Ills. 2000 w. Eng News—Feb. 6, 1913. No. 39711.

The Cause of the Failure of the Nashville Water Works Reservoir Wall-Nature of Recommended Repairs and Improvements. From a recent report by Rudolph Hering. 3000 w. Engng & Con—Jan. 29, 1913. No. 39581.

The Chingford Reservoir of the Metropolitan Water Board. Illustrated description of this new reservoir in the Lea Valley, impounding 3000 million gallons. Plate. 2500 w. Engng-March 14, 1913. No. 40822 A.

The New Reservoir at Chingford. Illustrated detailed description of this great engineering work in the Lea Valley, with related information. 2 plates. 6000 w. Engr, Lond—March 14, 1913. Serial. 1st part. No. 40831 A. The Chingford Reservoir near London

and the Humphrey Gas-Operated Hy-draulic Pumps (Le réservoir de Chingford, près de Londres, et les pompes hy-drauliques à gaz système Humphrey) Ch. Dantin. A brief description of the

plant, and the pump operation. Ills. 2400 w. Genie Civil-May 3, 1913. No.

Reservoirs

A Notable Reservoir for Flood Control in Germany. Kenneth C. Grant. Illustrated description of a recently completed dam in Silesia, built by the Prussian Government — the largest dam in Europe. 1600 w. Eng News-April 3, 1918. No. 41068.

Miami and Erie Canal Feeder Reservoirs During Ohio Floods. Illustrates and describes measures taken to protect embankments during high water. 800 w. Eng Rec-April 5, 1913. No. 41117.

Ohio Reservoirs During the March Floods. Morris Knowles. Information concerning the heavy precipitation and its effects on earth embankments. 4000

w. Eng Rec—April 19, 1913. No. 41358. The Design and Construction of a 2,000,000-Gal. Circular, Covered, Reinforced Concrete Reservoir at Fort Dodge, Iowa. C. T. Harding. Describes a reservoir for storing water from artesian wells. Ills. 1500 w. Engng & Con—May 21, 1913. No. 42312.

Improvements in the Georgetown Reservoir With Special Reference to Novel Form of Reinforced Concrete Baffle Wall. Drawings and description of details of the baffle wall, and of the remodeling work. 1200 w. Engng & Con-June 11, 1913. No. 42798.

The Prewitt Reservoir Proposition. J. C. Ulrich. Illustrated description of a development for the purpose of increasing the effective water supply of the South Platte Valley in the vicinity of Sterling, in the interest of the beet-sugar industry. 3500 w. Pro Am Soc of Civ Engrs—May, 1913. No. 42909 F.

A Reinforced Concrete Reservoir. Alexander Potter. Read before the Am W-Wks Assn. Illustrated description of a circular reinforced concrete reservoir 200 ft. in diameter and 26 ft. deep, with side wall wholly above the ground, built at Muskogee, Okla. 5000 w. Con Rec-July 16, 1913. No. 43815.

Construction of the Kamloops Reservoir. N. M. Hall. Describes work in British Columbia. Ills. 2000 w. Con Rec—July 23, 1913. No. 43870.

New Reservoirs in Italy and Sardinia. Maps and description of conditions and the scheme about to be carried out. 1800 Engr, Lond—July 18, 1913. 43972 A.

The Effect of Proposed Storage Reservoirs on Stream Flow and Water Power on the Lower Chippewa River, Wisconsin. Clinton B. Stewart. Gives results of study showing the benefit and cost.

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Snow Conservation

1500 w. Eng News-Aug. 7, 1918. No.

Building Tor Hill Reservoir, Regina. R. O. Wynne-Roberts. Describes the position and capacity, the excavations and embankments, details of the structure, method of operation, and gives general information. Ills. 2500 w. Con Rec-Aug. 27, 1913. No. 44864. See also River Regulation, under

Waterways and Harbors.

Residence Supply.

Modern Methods of Residence Water Supply. Illustrates and describes details of pneumatic water supply tanks, pumps and motors with the methods of installation and operation. 1200 w. Met Work —March 7, 1913. Serial. 1st part. No. 40361.

Review of 1912

Water Supply in 1912. A review of the year's progress. 3500 w. Engr, Lond-Jan. 3, 1913. No. 39166 A.

Rotterdam

Arrangement of the Rotterdam Water-Works (De inrichting van het Rotter-damsche Waterwerk). P. Huffnagel. Describes supply source, reservoirs, distributing system, filter plant, etc. Ills. 12000 w. De Ingenieur—Nov. 23, 1912. No. 38477 D.

See also Purification, under Water Sup-

ply. Run-Off

See Storm Sewers, under Municipal.

San Francisco

A Notable Water Supply Report. Abstract of a report by John R. Freeman, on the water supply for San Francisco and neighboring cities. Also "Summary of Hearing Before Secretary Fisher on the Hetch Hetchy Water Supply. John R. Freeman. Ills. 9000 w. Eng News -Dec. 26, 1912. No. 38594.

The San Francisco Water Supply. Map showing location of possible supplies, with explanation of the rival schemes and difficulties. 3500 w. Engng—April 11, 1913. No. 41389 A.

Sanitation

The Sanitary Control of the Ruhr River, Germany. Richard H. Gould. Gives the most important points of a Richard H. proposed law and the work undertaken. 1200 w. Eng News-Dec. 19, 1912. No. 38335.

The Public Control of Non-Navigable Streams from a Sanitary Standpoint. N. Ogden. Detailed discussion of riparian rights and the methods of control to secure the quality of streams, proposing a plan of control by river districts. Gen-Jour Cleveeral discussion. 12000 w. land Engng Soc-Jan., 1913. No. 39895 D.

The Sanitary Survey of the Ohio River Bordering Indiana. J. A. Craven. General remarks on stream pollution and its problems, with details of the work on this portion of the Ohio River. 3500 w. Indiana Engng Soc-1912. No. 41734 N.

See same heading, under MINING AND

METALLURGY, Mining. Saskatchewan.

The Moose Jaw Water Supply. P. Gillespie. Describes works consisting of an infiltration gallery, terminating in a main well over which is constructed a headworks pumping station, a pressure main, a headworks reservoir of 500,000 gallons capacity, a gravity main 96,000 ft. long, etc. Ills. 8500 w. Ap Sci—Feb., 1913.

No. 40388 C.

Seepage Seepage Losses from Earth Canals. E. Moritz. Discusses unpreventable losses, giving data on several hundred miles of canals, and diagram for estimating. 5000 w. Eng News—Aug. 28, 1913. No. 44882.

Settling Basin

Settling Basin at Lexington, Ky. W. Southard. Describes a recent addition to the plant to prevent trouble from algae growths and turbidity. Ills. 2000 w. Munic Jour—June 12, 1913. No. 42889.

Silt Deposits.

Method of Estimating the Probable Volume of Silt Deposits in River Storage Reservoirs for Oklahoma City Water Supply. Explains the inadequacy of the present supply, the recommended supply, and gives a study of the problems due to the deposition of silt in the storage reservoirs. 5000 w. Engng & Con-March 12, 1913. No. 40452.

Siphons Colorado River Siphon. George Schobinger, Jr. Explains conditions and gives detailed description of the construction of the siphon near Yuma, Arizona. Maps & Ills. 10000 w. Pro Am Soc of Civ Engrs—March, 1918. No. 41313 F.
Narrows Siphon of the Catskill Aque

duct. Alfred D. Flinn. Illustrated description of the cast-iron, flexible joint, submarine pipe line, 36 inches in diameter and 10,000 feet long, planned to carry water to Staten Island, N. Y. 2200 w. Eng Rec-Sept. 20, 1913. No. 45267.

Snow Conservation

Conservation of Snow for Irrigation; Its Dependence on Mountains and Forests. J. E. Church, Jr., in Bul. of Int. Irrigation Cong. Discusses the problem of conservation of snow and gives useful data of water content of snow areas of different character. 3500 w. Engng & Con -Feb. 5, 1913. No. 39698.

Snow Surveys

WATER SUPPLY

Sterilization

Snow Surveys

Snow Surveys for Predicting Stream Flows. J. Cecil Alter. Describes the instruments and surveys, and explains the practical use to which the data may be applied. Ills. 2500 w.
—May 29, 1913. No. 42561. Eng. News

Softening.

The Kennicott Water-Softening Plant. Illustrated description of a recent plant embodying modern improvements.

w. Engng—Feb. 7, 1918. No. 39917 A.
The Use of Permutit in Water Softening. Abstract of a paper by J. F. Garrett, read before the Illinois Water Supply Assn. Its characteristics and possible uses in the industries are discussed. 1500 w. Engng & Con-March 26, 1913. No. 40844.

The Use of Permutit in Water Soften-J. F. Garrett. Explains the most important characteristics of this compound. 1200 w. Technograph — Feb., 1913. No. 41712 C.

Municipal Water Softening. George A. Johnson. From a paper published by the U. S. Geol. Survey on "The Purifi-cation of Public Water Supplies." Discusses important features of the subject of water softening for domestic purposes. 4000 w. Can Engr-Aug. 14, 1913. No. 44398.

Specifications

Standard Specifications for Water-Works Hydrants and Valves. Gives specifiations adopted by the Am. W.-Wks. Assn. 2500 w. Eng News—Aug. 7, 1918. No. 44253.

Spillways
Spillways of the Siphonic Type. A. G. Illustrates and describes a method permitting an automatic regulation of storage reservoirs and forebays. Gives data regarding tests in Switzerland. 2000 w. Eng Rec-May 3, 1913. No. 41844. Stand Pipes.

The Design of a 300,000-Gal. Reinforced Concrete Standpipe for Penetanguishene, Ontario. Drawings and description. 800 Engng & Con-Jan. 22, 1913. 39331.

Reinforced Concrete Stand Pipe at Belton, Texas. Thomas L. Fountain. Illustrated description of the design and construction. 2000 w. Cornell Civ Engr — March, 1913. No. 40874 C.

The Recent Standpipe Failure at Cairo, Ill. G. C. Habermeyer. Illustrated description of the failure on Feb. 11, 1913.

and report of damage, with discussion of the cause. 2500 w. Eng News—April the cause. 2500 w. 24. 1913. No. 41619. Surge Tank at

San Francisquito

Power Station No. 1. Illustrates and describes a large concrete standpipe built in connection with the first of a series of power developments on the Los Angeles aqueduct. 1500 w. Eng Rec— Sept. 13, 1913. Serial, 1st part. No. **45110.**

Reinforced Concrete Stand Pipe at elton, Texas. Thomas L. Fountain. Belton, Texas. Illustrated description of the design and construction. 2500 w. Cement & Eng. News—Sept., 1913. No. 45136.

Sterilization

The Emergency Use of Hypochlorite Disinfection at Philadelphia. Water Francis D. West. Describes the precautions taken to prevent a typhoid epidemic when a break made it necessary to use river water. 1200 w. Eng News—Feb. 6, 1913. No. 39709.

The Sterilization of Potable Water with Chlorine. An account of measures what can be done for the purification of water by chlorine and the difficulties. 2800 w. Engng—Feb. 7, 1918. No. 39918 A.

The Sterilization of Water by Ultra-Violet Rays (Stérilisation de l'eau par les rayons ultraviolets). M. de Reckling-hausen. Description of the apparatus used; its invention, and results obtained in various services, especially the Marseilles experiments. Ills. 9100 w. Bul Soc Int d Elect — March, 1913. No. 41511 F.

Water Sterilization by Ultra-Violet Dr. Max von Recklinghausen. Brief explanation of the main principles embodied, the types of apparatus used, describing recent developments. Ills. 1500 w. Elec Wld—July 26, 1913. No. 43927.

Purifying Water by the Action of Ultra-Violet Light. Dr. M. von Recklinghausen. Explains the principles which

nausen. Explains the principles which form the basis of water sterilization by mercury quartz lamps. 1200 w. Sci Am—July 19, 1913. No. 43777.

The Use of Liquid Chlorine in Water Sterilization. Information from a recent paper by John A. Kienle, and from the Electro Bleaching Gas Co. 2000 w. Engng & Con—July 30, 1913. No. 44051. Sterilizing Water with Ultra-Violet

Rays. M. von Recklinghausen. Description of a new "Pistol" light and its applications in large and small plants. Ills. 1500 w. Eng Rec.—Aug. 2, 1913. No. 44674.

Lime Sterilization of Water. P. Hoover and Russell D. Scott. Gives results of research work conducted at the Columbus water-purification plant. 4000

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Tanks

Eng Rec-Sept. 6, 1913. No. 44993. See also Purification, under Water Supply.

Stream Flow

A Theoretical Formula for the Flow of Liquids Through Narrow Rectangular Channels. Ernst Jonson. Gives the formula developed, and the confirming ex-1200 w. Eng News-Dec. periments. 19, 1912. No. 38330.

The Interpretation of Stream Flow Gaging Records of the Sunol and Niles Dams by an Experimental Study of the Flow Over Models. Describes the arrange-ments made for testing flowage and the experiments. 2500 w. Engng & Con—

Jan. 8, 1913. No. 38937.

Kutter's Coefficient of Roughness in Chezy's Formula (Die Kutter'schen Rauhigkeitsziffern in der Chézy'schen For-mel). Th. Rümelin. Mathematical discussion, showing results of this combina-tion. Diagram. 3000 w. Schweiz Bau —Dec. 21, 1912. No. 39012 D.

Measuring the Flow of a Stream. Richard Hamilton Byrd. Illustrated explanation of how water powers are accurately calculated. 1500 w. Sci Am—March 22,

1913. No. 40747.

Water Measuring Devices. W. G. Steward. Illustrates and describes current meters, canal gauges, wire gauges, automatic registers, etc., giving discharge tables and other information. 2500 w. Jour of Idaho Soc of Engrs—June 1912. No. 41726 N.

Methods of Estimating Stream Flow When Streams Are Frozen. W. G. Hoyt. Notes on methods employed in making computations of flow of water in ice-cov-

ered streams. 1600 w. Eng News—April 10, 1913. No. 41164. Stream Flow Gagings Under Anchor Ice Conditions. Chester Wason Smith. Describes measurements made in winter

Describes measurements made in winter showing the effect of temperature and anchor ice. 1500 w. Eng News—June 19, 1913. No. 42984.

Recent Gauging Methods in the Determination of Stream Flow Based on Research by the Swiss Hydrographical Bureau (Neuere Messmethoden zur Bestimmung um Wessermengen auf Grund stimmung von Wassermengen auf Grund von Versuchen der Schweizerische Landes hydrographie). W. Zuppinger. Description of a new chemical method recently applied. Ills. Serial, 1st part. 2500 w. Schweiz Bau—July 26, 1913. No. 44642 D.

Measurement of the Flow of Streams by Approved Forms of Weirs, with New Formulas and Diagrams. Richard R. Lyman. Details and summaries of the results of experiments by Francis, Bazin, Fteley and Stearns, and at the hydraulic laboratories of Cornell University and the University of Utah. 83 pp. Pro Am Soc of Civ Engrs-Sept., 1913. 45521 F.

See also Meters and Reservoirs, under Water Supply.

Stream Gauging.

Note on James Thomson's V-Notches. H. S. Rowell. Gives results of experimental investigations. Ills. 700 w. Engng-May 2, 1913. No. 42003 A.

Stream Regulation

The Emscher Federation and Its Work (Die Emschergenossenschaften und ihre Arbeiten). Herr Engberding. The organization of the association; its work in the regulation of the Emscher river, canalization, etc; the purification of water supplies, and the Imhoff tanks for the prevention of water pollution. Ills. Serial, 1st part. 3100 w. Glückauf—June 21, 1913. No. 43510 D.

Supply Problems

Water-Supply Problems in the West. R. O. Wynne-Roberts. Read before the Regina Engng. Soc. Explains geological conditions in the middle west, rainfall and evaporation, sterilization, filtration and distribution. 5000 w. Con Rec—May 21, 1913. No. 42345.

Supply Systems.

The Danger of Physical Cross Connections Between Public and Private Water Supply Systems—A Suggested Mechanical Safeguard. H. E. Jordan, in a paper before the Indiana San. & Water Supply Assn. A statement of the problem and a suggested solution. 1800 w. Engng & Con—March 5, 1913. No. 4047.

Permanent Water Supply for Cherryvale, Kan. Water is brought 6 miles and filtered for a town of 6,000 inhabitants. Ills. 2500 w. Eng Rec-Sept. 6, 1913.

No. 42994. Tanks

Elevated Tanks for Fire-Protective Service. Bryan Blackburn. Considers factors affecting the design, life and service of elevated tanks. 2500 w. Engineering 1912. Magazine—Dec., 37794 B.

The Design and Construction of a 600,-000-Gal. Reinforced Concrete Elevated Water Tank at Berlin, Ontario. Illustrated description of a tank supported on a cylindrical shell, and its construction. 2000 w. Engng & Con—Dec. 25, 1912. No. 38550.

Large Reinforced Concrete Water Tanks. L. J. Mensch. Discusses their advantages, design, construction, &c. Ills. 2000 w. Ry & Engng Rev-Jan. 11, 1918. No. 39112.

Typhoid

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Water Censumption

Reinforced-Concrete Double-Deck Water Tank. Describes a tank of unusual design built recently at Rockford, Ill. 1200 w. Eng News-July 24, 1913. No.

See also Steel Towers, under Construc-

Typhoid

The Effect of Safe Water Supplies on the Typhoid Fever Rate. Dr. Allan J. McLoughlin. Abstract of an address delivered at meeting of the Assn. of Life Discusses causes of Ins. Presidents. typhoid epidemics from sewage polluted Can Engr—Dec. 12, 2500 w. water. 1912. No. 38271.

The Typhoid Outbreak at Albany, N. Y., Due to Flooded Filters. Theodore Horton. An account of this epidemic in April, 1913, showing the relation between the infection of the supply and the outbreak of the cases. 3000 w. Eng News

-May 15, 1913. No. 42095.

Municipal Control of Typhoid Fever. Charles R. Grandy and C. J. Andrews. Suggestions for controlling the disease. 1500 w. Am Jour of Pub Health—Aug.,

1913. No. 45534 C.

A Plea for a More Widespread Interest in the Investigation and Control of Typhoid Fever. Part I. Dr. William C. Hanson. Part II. Dr. Lyman A. Jones. 2000 w. Am Jour of Pub Health—Aug., 1913. No. 45532 C.

Institutional Vaccination Against Typhoid. John N. Force. Describes the preparation and administration of sensitized anti-typhoid vaccine. 1000 w. Am Jour of Pub Health-Aug., 1913. No.

45535 C.

Some Relations Between Filtered Water and Typhoid Fever, as Shown in the Two Years' Service of the Wilmington Filters. T. Chalkley Hatton. Brief description of the two years' work of the slow sand filters. 1800 w. Am Jour of Pub Health-Aug., 1913. No. 45533 C.

The Yakima Sanitary Campaign. Thomas Tetreau. A review of the year's work against typhoid fever in the Yakima Valley and the results achieved. 2500 w. Am Jour of Pub Health—Aug., 1913. No.

45531 C.

Typhoid Tests

Approved Technique of the Rideal-Walker Test. Samuel Rideal and J. T. Ainslie Walker. Specific directions for obtaining correct and satisfactory results in testing for typhoid bacillus. Ills. 3000 w. Am Jour Pub Health—June, 1913. No. 44005 C.

Valuation

The Valuation of Water-Works Undertakings on Transfer to Municipal Authorities. E. J. Silcock. Read before the Inst. of Water Engrs. Discusses the principles on which compensation should be determined. Discussion. 5500 w. Surveyor—June 18, 1913. No. 43137 A.

Vancouver

The City of Vancouver's Water Sup-y. Considers future extensions necesply. sary, the available supply, size of pipe, cost data, etc. Ills. 2200 w. Con Rec— May 21, 1913. No. 42346.

Methods and Cost of Making House to House Inspection to Detect Water Waste in Chicago Pulling Repairs. Abstracted 1 port of T. C. Phillips. 3000 w. in Chicago During 1911—Permanency of Abstracted from re-

& Con—Jan. 8, 1913. No. 38936.

The Cause and Detection of Water
Waste. From the Real Estate Mag. Discussing especially the conditions in New York and the great expense due to waste; the causes, difficulties, &c. 3000 w. Dom Engng—Feb. 8, 1913. No. 39761.

City Water Waste. Information from

a report concerning the city of Ottawa, Can., with recommendations. 2500 w. Can Engr—March 13, 1913. No. 40681. Water Waste Prevention. Abstract

of a paper before the Am. W-Wks. Assn. by I. M. de Varona. An account of work done in Manhattan and the Bronx Boroughs, New York, to avert water famine. The methods and results. 5000 Munic Jour-July 3, 1913. No. 43438.

Water-Waste and Pitometer Surveys in Philadelphia. John S. Ely. An account of house-to-house inspection to prevent waste, and pitometer surveys, with results obtained. 1800 w. Eng News—Oct. 2, 1913. No. 45655.

Present Status of the Question of Purification of Municipal Waste Waters (De tegenwoordige stand van het vraagstuk der zuivering van stedelijk afvalwater). A. H. op ten Noort. A review of the work accomplished in some English and German municipalities. Ills. 15600 w. De Ingenieur-Sept. 6, 1913. No. 46096 D.

Water Analyses

Reasons for Reporting Water Analyses in Ionic Form in Parts per Million. R. B. Dole. A plea for the general use of the ionic form. 4000 w. Eng Rec—June 21, 1913. No. 43112.

Water Consumption

Report of Committee on Water Consumption Statistics and Records. Report on desirable revision of forms, and discussion of reasons for the wide variation in daily consumption per capita in American cities. 115 pp. Jour N Eng W-Wks Assns—March, 1913. No. 48160 F.

Water Departments

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Water Tower

Water Departments

Organization of the Department of Water, San Diego, California. H. A. Whitney. Describes the organization and duties of employees. 3000 w. Engng & Con—May 7, 1913. No. 41909.

Water Laws

State and National Water Laws, with Detailed Statement of the Oregon System of Water Titles. Discussion of John H. Lewis' paper. 13800 w. Pro Am Soc' of Civ Engrs—Nov., 1912. No. 38290 F. State and National Water Laws, with Detailed Statement of the Oregon System of Water Titles. Continued discussion of

Detailed Statement of the Oregon System of Water Titles. Continued discussion of John H. Lewis' paper. 19000 w. Pro Am Soc of Civ Engrs — March, 1913. No. 41314 F.

Water Power

Certain Legal Aspects of Water-Power Development in Maine. Cyrus C. Babb. Gives extracts from a number of decisions intended to represent general principles, and discusses proposed legislation. General discussion. 26500 w. Jour N Eng W-Wks Assn—Sept., 1912. No. 37912 F.

Projects for Utilising and Transporting the Hydraulic Power of the Upper Rhone (Projet d'utilisation et de transport des forces hydrauliques du Haut Rhone Francais). Henri Ourson. Proposed plans. Plate. 4500 w. Mem Soc Ing Civ de France—Sept., 1912. No. 37487 G.

The Federal Water-Power Policy. M. O. Leighton. Discusses federal regulation, its basis, need, etc., with a summary of important features of regulations approved Aug. 24, 1912. 4500 w. Eng News—Dec. 12, 1912. No. 38177.

Water Power Plant for the Wolfsheck Wood and Paper Manufactory (Wasserkraftanlage mit Holzstoff- und Papierfabrik Wolfsheck). Fr. Oesterlein. Describes the power plant of E. Holtzmann & Co. at Baden; intake canals, pressure pipes, and turbines. Ills. Serial. 1st part. 4500 w. Zeitschr des Ver deutscher Ing—Nov. 2, 1912. No. 38445 D. The Plant of the Vigeland Company

The Plant of the Vigeland Company (Die Werke der Aktieselskabet Vigelands Brug). Showing water power developments at this Norwegian aluminum factory. Ills. Serial. 1st part. 1000 w. Zeit f d Ges Turbinenwesen—Nov. 10, 1912. No. 38459 D.

Determining Power Possibilities on a Watershed. Lyle A. Whitsit. An analysis of the power possibilities on a large watershed, discussing the method of power determination. 4500 w. Eng News—Sept. 11, 1913. No. 45070.

See also Hydroelectric and Water Wheels, under ELECTRICAL ENGINEERING, Generating Stations, and Appraisals, under INDUSTRIAL ECONOMY,

Water Ram

An Experience with Water Ram. Charles W. Sherman. An explanation of a case where a hydraulic elevator in a summer hotel caused the trouble. Discussion. 3000 w. Jour N Eng W-Wks Assn—June, 1913. No. 43986 F.

Water Ram in Distribution System,

Water Ram in Distribution System, Hartford, Conn. Caleb Mills Saville. An account of trouble due to the standpipes for filling locomotives, and other sources of water ram. Discussion. 2000 w. Jour N Eng W-Wks Assn—June, 1913. No. 43987 F.

Water Rates

Charges for Public Water Service to Private Fire Protection Systems. W. E. Miller. A summary of the arguments for and against the establishment of schedule charges for service of this kind, with particular reference to conditions at Milwaukee. 4000 w. Am W-Wks Assn—June, 1913. No. 44477 N.

Water Resources

Wise Utilization of Water Resources of Pennsylvania. Morris Knowles. Shows the blessings possible through wise conservation, the legislation required, the cost of floods, &c. Discussion by John C. Trautwine, Jr. Ills. 10000 w. Pro Engra' Club of Phila—July, 1913. No. 44333 D.

Watersheds

The Reforestation and General Care of Watersheds. Ermon M. Peck. Deals particularly with the reforestation of the Hartford, Conn., watershed, and the care. 1500 w. Am W-Wks Assn—June, 1913. No. 44475 N.

The Yield of a Kentucky Watershed. George L. Thon and L. R. Howson. Attempts to analyze the various steps in the computation of yield on a particular watershed the run-off records of which were available for 26 years. 4000 w. Jour W Soc of Engrs—Sept, 1913. No. 46288 D.

See also Irrigation, and Reforestation, under Water Supply.

Water Towers

Large Reinforced Concrete Water Tower. A. W. Connor. Illustrates and describes features of design and construction of the tower at Berlin, Ont. 1500 w. Con Rec—April 30, 1913. No. 42078.

The Water Tower at the Nürnberg Switch Yards (Der Wasserturm im Rangierbahnhof Nürnberg). Hermann Goebel. Detailed description of this reinforced concrete tower. Ills. and plate.

WATER SUPPLY

Wairs

2000 w. Beton u Eisen-Dec. 14, 1912. No. 39016 E.

See also Steel Towers, under Construc-

Water Works

Central Water-Works System of the Tennessee Coal, Iron & Railroad Company. Morris Knowles. Illustrated description of a system developed to provide for present and future needs of the company. 5500 w. Eng Rec—Nov. 23, 1912. Serial. 1st part. No. 37755.

Reasonable Requirements Imposed Upon Water Works Systems by the Fire Protection Problem. Review of Modern Practice. Clarence Goldsmith. From a paper before the New England W-Wks. Assn. A discussion of modern water department methods with special reference to fire protection problems. 7500 w. Engng & Con—Jan. 22, 1913. No. 39330.

Cost of Building Waterworks Plant and

Power House. John W. Ash. Illustrated description of works at Dalton, Ga., including coagulating basin, filters, clear-water well, and reservoir. 2000 w. Eng Rec-Jan. 25, 1913. No. 39370.

To Improve St. Louis Water Works. Harry M. Crutcher. Illustrated description of the present plant and proposed extension. 3000 ₩. Munic Jour-Jan. 2. No. 38784. 1913.

The Design of the New Water Works Intake and Screen Tower at Louisville, Ky. G. D. Grain, Jr. Illustrated description of work nearing completion. 1500 w. Engng & Con—Jan. 29, 1913. No. 39586.

The Special Features of the Recent Water Works Improvements at Rushville, Water Works Improvements at Rushville, Ill. Information from a paper by F. H. Coult, read before the Ill. Water Sup. Assn. Describes a new pumping plant, and a large shallow well, pipe line and booster pumping-plant. 2200 w. Engng & Con—March 19, 1913. No. 40731.

A Small Water Works Plant for Kingsburg Calif. C. F. Braun. Describes a

burg, Calif. C. F. Braun. Describes a plant for a town of about 1,000. 1200 w. Eng News-March 27, 1913. No. 40938.

Progress in Concrete Work as Related to Water Works Construction. William Curtis Mabee. Brief review of the growth of the cement industry in the United States and its application in water-works construction. 3000 w. Indiana Engng Soc-1912. No. 41742 N.

Design of the Reconstructed Water Works Plant in Miles City, Mont. G. C. Pruett. Illustrated general description of the plant and its equipment. 4000 w. Engng & Con — April 23, 1913. No. 41589.

Moose Jaw Water-Supply System. Il-

lustrated description of the work of bringing 1,000,000 gallons of water 19 miles to a Saskatchewan town and constructing head and distribution works in eight months. 3000 w. Eng Rec.—June 21, 1913. No. 48111.

The Lowell Water Works and Some Recent Improvements. Robert J. Thomas. An illustrated account of improvements in the water works of Lowell, Mass., including an extension of the driven well system, a new pumping station and distributing reservoir. Discussion. 8000 tributing reservoir. Discussion. 8000 w. Jour N Eng W-Wks Assn—March, 1913. No. 43159 F.

Water Works of Niagara Falls. Brief illustrated description. 25000 w. Munic Jour—June 12, 1913. No. 42838.

Water Works of San Diego. Reviews briefly the history of the water supply, illustrating and describing the present plant. 2500 w. Munic Jour—June 12, 1913. No. 42840.

Water Works. From a paper by George A. Johnson, read before the Am. W. Wks. Assn. A discussion of the establishment.

sential and non-essential determinations in the general run of water analyses. 7500 w. Engng & Con-July 9, 1913. No. 43610.

Marshalltown's Municipal Water water Works. Harry J. Rodgers. Brief illustrated account of a supply in Iowa from gravel by 30-foot wells. 1500 w. Munic Jour—Aug. 21, 1913. No. 44535.

Improved Management of Waterworks. Paul Hansen. Advocates the employment of consulting experts in connection with the operation of small waterworks installations, for improving the service, the equipment, and the economy of operation. Also discussion. 6000 w. Jour W Soc of Engrs—Sept, 1913. No. 46287 D. See also Public Utilities, under INDUS-

Water-Works Accounting.

TRIAL ECONOMY.

A Discussion of Water Works Accounting with a Suggested System of Accounts. G. S. Olive. Paper before the Indiana San. & Water Supply Assn. Discusses the general scope of water works accounting and suggests a system. 2500 w. Engng & Con—March 5, 1913. No. 40350. Weirs

Automatic Weirs (Automatisches Ueberfallwehr). K. Böhm. Describes the mechanism of the automatic weir,

and discusses the theory of its action.

Ills. 1800 w. Zeit d Oest Ing u Arch
Ver—Sept. 27, 1912. No. 37434 D.

Experiments on Weir Discharge. W.
G. Steward and J. S. Longwell. Discusses experiments made by the writers

at the experiment station of the Reise at the experiment station of the Boise

Canals

Project of the U. S. Reclamation Service during 1911. 7500 w. Pro Am Soc of Civ Engrs—Feb., 1913. No. 40168 F.

Experiments on Weir Discharge. Continued discussion of the paper by W. G. Steward and J. S. Longwell. 2000 w. Pro Am Soc of Civ Engrs—Aug., 1913. No. 44793 F.

Experiments on Weir Discharge. C. H. Pierce's discussion of the paper by W. G. Steward and J. S. Longwell, Jr. Ilis. 1500 w. Pro Am Soc of Civ Engrs-April, 1913. No. 41650 F.

Lessons from the Failure of a Weir and Sluices on Porous Foundations. W. G. Bligh. Illustrates and describes details of the design, the collapse of a portion of the work, and the lessons to be drawn. 3800 w. Eng News—Feb. 6, 1913. No. 39710.

The V-Notch Weir Method of Measurement. Discussion of D. Robert Yarnall's paper. 1000 w. Jour Am Soc of Mech Engrs—April, 1913. No. 41297 D. Experiments on Weir Discharge. Con-

tinued discussion of the paper by W. G. Steward and J. S. Longwell. 2000 w. Pro Am Soc of Civ Engrs—Aug., 1913. No. 44793 F.

Report on Weir in the Niagara River. An investigation as to the advisability of a dam at the outlet of Lake Erie, or of "compensating" works without complete regulation. Ills. 2500 w. Eng Rec—Aug. 23, 1913. No. 44547.

See also Stream Flow, under Water Supply.

Wells

Deep Artesian Well and Deferrating Illustrated description of an interesting artesian bore at Ottershaw. Eng., and the purifying plant. Engr, Lond—Jan. 3, 1913. No. 2500 w. No. 39171 A.

Practical Well Sinking. B. A. Harrison. Briefly considers ancient wells, boreholes, origin of springs, and chemistry of well waters. Ills. 1200 w. Prac Engr—Jan.

30, 1913. Serial, 1st part. No. 39781 A.
The Experience of the State of Illinois
With the Shallow Well. Dr. Edward
Bartow. Read before the Indiana San. and Water Supply Assn. Describes the general experience, giving statistics. 1500 w. Engng & Con—March 12, 1913. No. 40451.

Yield of Limestone and Sandstone Wells. Information from a paper by Wyron E. Fuller, read before the N Eng W-Wks Assn. Ills. 2500 w. Munic Engng—July, 1913. No. 44038 C. See also Ground Water, under Water

Supply.

Winnipeg
A Water Supply for Winnipeg. A report by an official board of consulting source of supply. 3000 w. Can Engr— Sept. 11, 1913. No. 45125.

Wood Pipe
The Manufacture of Wood Pipe. E. F. Week. Information concerning its use, limitations, manufacture, length of life, 1500 w. Wis Engr-Feb., 1913. etc. No. 41266 C.

Woolworth Building
Water-Supply System in the Fiftyfive Story Woolworth Building, New York. Describes the pump, filter and tank service, and distribution and pressure control supplies for mechanical and switch purposes and fire protection. 3000 w. Eng Rec-July 12, 1913. No. 43659.

WATERWAYS AND HARBORS

Barge Canal

New York State Barge Canal. Noble E. Whitford. A report of the progress made and features of construction. 2000 w. Sci Am-April 26, 1913. No.

Bank Strengthening on the New York Barge Canal. Describes the use of steel sheet-piling. Ills. 1500 w. Eng News—June 19, 1913. No. 42986.

See also Locks, under Waterways and Harbors.

Breakwaters

Concrete Superstructure Over the Detached Breakwater, Michigan City Harbor. G. A. M. Liljencrantz. Explains the exposed position and the concrete work to increase the stability. Ills. 1500 w. Engng & Con-April 9, 1913. No. 41194.

Brest

Study on the Creation of a Transatlantic Port at Brest (Étude sur la création d'un port transatlantique a Brest). A. Lavezzari. The advantages of the location and the constructional problem. Ills. 10,000 w. Mem Soc Ing Civ de France—April, 1913. No. 43080 G.

Canal Lining

Concrete Lining of the Main Canal on the Boise Irrigation Project. F. W. Hanna. Illustrated description of extension work in the west. 3000 w. Eng Rec -Dec. 21, 1912. No. 38320.

Canale

Navigable Waterways in Austria (Schiffbare Wasserstrassen in Oesterreich). Artur Oelwein. Arguments in favor of canals, giving comparative traf-

Canals

WATERWAYS AND HARBORS

Channels

fic over railways and waterways. 3500 Zeit d Oest Ing u Arch Ver-Oct. 11, 1912. No. 87438 D.

Connecting Lake Washington, Seattle, with Puget Sound William L. Kidston. Illustrates and describes details of a ship canal to connect tidal waters with a fresh water lake. Map. 1800 w. Eng Rec—Dec. 7, 1912. No. 38079.

Proposed Rhine-North Sea Ship Canal.

Information concerning two schemes under discussion for constructing a ship canal from the Rhine to the North Sea through Teutonic territory. 1100 w. Engr, Lond—Dec. 13, 1912. No. 38528 A. Canalization Work in the City of Suc-

zawa (Die Kanalisation der Stadt Suczawa). G. Thiem. An analysis of the plans presented. Map. Serial. 1st part. 3000 w. Zeit d Oest Ing u Arch Ver—Nov. 1, 1912. No. 38457 D.

Construction of the Calumet-Sag Canal. E. J. Kelly. Map. plans and description of the construction of the Calumet channel. Ills. 3000 w. Eng News—Jan. 23, 1913. No. 39372.

Proposed South Saskatchewan River Diversion Canal. Map and description of the scheme from a report by F. M. Peters. 2500 w. Can Engr-March 20, 1913. No. 40783.

The Proposed Georgian Bay Ship Canal. Review of a recent report describing this project in detail. It is essentially a river and lake canalization scheme, taking advantage of natural channels. Ills. 2500 w. Engr, Lond—April 4, 1913. No. 41244 A.

The Georgian Bay—Ottawa—Montreal Waterway. J. A. Macdonald. Reviews the proposed course of the canal and the difficulties encountered, and discusses the

difficulties encountered, and discusses the project. Ills. 2000 w. Can Engr—April 17, 1913. No. 41338.

The Barge Canal from the Hudson to the Lakes (Il Barge Canal dall' Hudson ai Laghi) E. Sanjust. A descriptive review of this work and its purposes. Ills. 1500 w. Ann della Soc Ing e d Arch Ital—May 1, 1913. No. 42501 E.

Intercoastal Canal. Warren B. Reed. Considers the portion of the canal between the Mississippi River and the Rio Grande. particularly within Louisiana.

Grande, particularly within Louisiana. Jour Assn of Engng Soc-July, 1913. No. 48997 C.

The Cape Cod Canal. Describes the country through which the canal passes, and explains the great saving in lives and property expected, giving a synopsis of the progress of this project, and its present construction. Ills. 2500 w. Eng Jan. 3, 1913. No. 39143 A. Electric Service in Connection with the

Cape Cod Canal. Illustrated description of the application of electricity in the construction of this canal. 1200 w. Elec Wld—Aug. 23, 1913. No. 44562. The Cape Cod Canal. Describes this

canal now being built, explaining its importance. Ills. 1600 w. Sci Am—Sept. 6, 1913. No. 45018. The Barge Canal Crossing of Oak Orchard Creek, Medina, N. Y. Noble E. Whitford. Explains conditions, giving proposed schemes for crossing, and describing the adopted design. Ills. 4000 w. Eng News—July 31, 1913. No. 44108.

Proposed Welland Ship Canal. Map and description of the general features of the plan adopted. 2200 w. Eng Rec —July 12, 1913. No. 43653.

The New Welland Ship Canal. The

third and greatest waterway to join Lakes Erie and Ontario described. Also notes relating to old Welland canals. Ills. 4500 w. Can Engr-Aug. 21, 1913. No. 44567.

The New Welland Ship Canal. Map. sections and description of the new canal under construction, which will be capable of taking boats up to 800 ft. length. 3000 w. Eng News—Sept. 25, 1913. No. 45488.

Intra-coastal Canal System for the Atlantic Seaboard. Considers the movement to construct a system of interconnected canals from Boston, Mass., to Beaufort, N. C. Maps. 1800 w. Sci Am—Sept. 6, 1913. No. 45019.

A Forward Canal Policy. W. M. Acworth. Read before the British Assn. Discusses the subject with particular reference to Birmingham Fing. Does not

erence to Birmingham, Eng. Does not think the policy justified. 2200 w. Ry Gaz, Lond—Oct. 10, 1913. No. 45972 A. The Large Ship Canal Between Berlin and Stettin (Der Grossschiffahrtweg Ber-lin Stettin). Herr Mattern. Description of the former canal, and the new line, straighter, deeper and wider, with the work of construction. Ills. Serial, 1st part. 4400 w. Zeit des Ver deutscher Ing—Aug. 23, 1913. No. 46035 D.

The Effects from Ship Propellers on

Canal Beds (Die Wirkungen der Schiffsschraube auf die Kanalsohle). O. schraube auf die Annaisonne,. Flamm. Results of thorough investigaing effects produced by propellers and rudders in destroying the beds. Ills. 2800 w. Schiffbau—Sept. 10, 1913. No. 46049 D.

See also Reinforced Concrete, under Bridges.

Channels.

Factors in Channel Design. Data from studies made on the Hudson River of the relation of depth of navigable waterways

Drainage

and draft of vessels to speed and propelling power. 3500 w. Eng Rec-March 1, No. 40265.

A Channel and Beach Maintenance Problem. R. R. Raymond. Explains conditions and proposed improvements of Absecon Inlet, near Atlantic City, N. J. Map. 5000 w. Eng News-July 24, 1913. No. 43879.

St. Lawrence Ship Channel Improvements. Harry Chapin Plummer. trates and describes the construction of a 35-foot channel between Montreal and Quebec. 1800 w. Sci Am-Sept. 6, 1913. No. 45017.

China

Chinese Famine and Proposed Flood Prevention. Charles Davis Jameson. Condensation of a preliminary report on "River, Lake and Land Conservancy in Portions of the Provinces of Anhui and Kiangau, North of the Yangteze River."
Map & Ills. 4500 w. Eng News—Sept. 25, 1913. No. 45487.

Colorado River

Irrigation and River Control in the Colorado River Delta. H. T. Cory. An illustrated detailed account of the successful and unsuccessful work in this region in connection with irrigation and river control. 215 pp. Pro Am Soc of Civ Engrs—Nov., 1912. No. 38287 F. Irrigation and River Control in the

Colorado River Delta. Continued discussion of H. T. Cory's paper. Maps & Ills. 15000 w. Pro Am Soc of Civ Engrs—March, 1913. No. 41316 F.

See also Levees, under Waterways and Harbors.

Curacao

Improving a Harbor of Curacao. Harry Chapin Plumer. Illustrated outline of improvements at Willemstad, Curacao Island, in anticipation of the opening of the Panama Canal. 1200 w. Sci Am-May 24, 1913. No. 42314.

Dikes

Details of Concrete Dike and Revetment Construction on the Missouri River, with a Review of the Development of Dike Construction on This Stream. Summary of an article by Edward H. Schultz. Ills. 4500 w. Engng & Con—Nov. 20, 1912. No. 87704.

Dock Machinery

See same heading, under MECHANICAL Engineering, Transporting and Conveying.

Docks

Lake Superior & Ishpeming Ore Load-g Dock. J. F. Jackson. Illustrated ing Dock. J. F. Jackson. description of a steel and concrete structure at Marquette, Mich. 1400 w. Ry Age Gaz—Nov. 8, 1912. No. 87828.

Handling Traffic at Immingham Dock. Plate and explanation of method of dealing with trains. 700 w. R.—Jan. 3, 1913. No. 39143 A. Ry Gaz, Lond

Calculations for the Stability and Displacement of Graving Docks. Leonard Godday. Explains methods of working, giving diagrams and calculations. 1500 Čan Engr — April 10, 1913. No.

41204.

Dock Design and Construction in Fort William and Port Arthur. William C. Sample. Information concerning the admirable harbor facilities, and illustrated description of an elevator dock now under construction. 2500 w. Can Engr-

May 1, 1913. No. 41875.

Construction of Two Graving Docks at the Laninon Yards (Construction de deux formes de radoub sur les terre-pleins de Laninon). M. M. Bezault and Thérenot. Description of the work connected with the military port at Brest. Ills. 82 pp. Ann d Ponts et Chaussées-March, 1913. No. 42182. E. + F.

Hanging Fenders for Docks. H. J. Brunnier. Describes fenders as formerly used, and also the hanging fenders, explaining the great saving effected. Ills. 1300 w. W Engng—June, 1918.

No. 43188 C.

Canadian Pacific Coal Unloading Dock. Illustrated description of a new plant at Ft. William, Ont., having a large capacity, and differing from the usual designs. 1800 w. Ry Age Gaz—May 30, 1913. No. 42635.

Calculation of Docks and Bulkhead Walls. A discussion of forces and loads and designs of structures necessary to resist them. Ills. 4000 w. Eng Rec-Sept. 20, 1913. No. 45269.

Northern Pacific Ore Dock. Illustrated description of the new steel and concrete dock at Allouez Bay, Wis. 2000 w. Ir. Trd Rev—Oct. 23, 1913. No. 46153.

See also Ore Docks, under Waterways and Harbors.

A Discussion of the Economies of Constructing Cut-Offs Instead of Enlarging Original Channel in River Improvements for Drainage and Flood Control. Extracts from a discussion by William R. Hoag before the Minn. Soc. of Engrs. States a case, showing how a cut-off may, under certain conditions, prove economical. 2500 w. Engng & Con—March 12, 1913. No. 40456.

Drainage of the Haarlem Lake in Holland. M. C. G. Elliott. Abstract of a paper read before the N. Carolina Drain-age Assn. Map and description of the largest drainage project in Holland.

Dredging

3500 w. Eng Rec-May 17, 1913. No. 42222.

See also same heading under Municipal, and Mosquito Extermination, under Miscellany; and Reclamation and Drainage, under Construction.

Dredging

Dredging Operations of the Dominion of Canada. Emile Low. Gives tabulated data of dredging plants owned and op-erated by the Dept. of Public Works, Canada, for year ending March 31, 1911, with related information. 2500 w. Eng News-Nov. 7, 1912. No. 87321.

Methods and Cost of Dredging Gravel, Using a Weeks' Two-Line Shovel. W. C. Weeks. Illustrated description of work at Vancouver, B. C. 900 w. Engng & Con

—Feb. 5, 1913. No. 39690.

Dredging Equipment for Harbor Maintenance. From a paper by C. O. Sherrill. Discusses types of dredges, their adaptability, etc. 1800 w. Eng Rec—March 8, 1913. No. 40371.

Cost of Dredging 21,016,512 Cu. Yds. of Material with 38 Hydraulic Pipe Line Dredges During 1912. Costs and description of the work of the pipe line operated from July 1, 1911, to July 1, 1912, as tabulated from the reports of the Chief of Engrs., U. S. Army. 5000 w. Engng & Con—April 23, 1913. No. 41588.

Hydraulic Dredging on New Barge Canal. Emile Low. Illus Illustrates and describes some of the more recent types of suction dredges, their performance, and approximate costs of operating 8800 w. Eng News-April 10, them. 1913. No. 41162.

Dredging. M. G. Kindlund. Describes methods in general use for loosening the materials to be dredged, explaining the characteristics of the different materials. Ills. 5000 w. Int Marine Engng-May,

1913. No. 41896 C.

Dredging Problems in Wilmington Harbor, Delaware. R. R. Raymond. Describes the physical condition of the harbor and plans proposed to reduce the rate of silt deposit, and the maintenance problems. 4500 w. Eng News—May 8, 1918.

Cost of Dredging 29,708,465 cu. yds. of Material With 24 Sea-going Hopper Dredges During 1912. Notes on the year's operations, with tabulated statistics. 3500 w. Engng & Con-April 30,

1913. No. 41820.

Dredging Work at the Entrance to the Western Channel of Surabayo (De slibarbeid op den drempel van het Westervaarwater van Sverabaja). A. J. M. A. Ridder. An account of this work in the Dutch Indies and the particular type of

dredge constructed for the work. 7000 w. De Ingenieur-May 10, 1913.

No. 43050 D.

Hydraulic Dredging on the Upper Mississippi River. R. Monroe. Describes the work in progress, the dredges, dredging operations, etc. Ills. 3000 w. Eng operations, etc. Ills. 3000 w. News—July 24, 1913. No. 43877.

Equipment and Performance of the British Columbia Dredging Fleet. Gives operating cost of five different types of dredges and auxiliary plant, with a discussion of causes of delay. Ills. 3000 w. Eng Rec.—Aug. 23, 1913. No. 44548.

Records and Cost of Work of Dipper

Dredges Operated by the United States Engineers in River and Harbor Improvements. 4000 w. Engng & Con—Aug. 18, 1913. No. 44350.

Electric Power on a Dredger. Richard E. Smith. Illustrated account of work on the Pacific Coast, describing the largest machine in use. 1000 w. Elec Rev & W Elect'n—Oct. 18, 1913. No. 45959. See also Dredge Recorder, and Dredges,

under MARINE AND NAVAL ENGINEERING.

Flood Control

The Problem of Flood Control. C. McD. Townsend. Condensed from an address before the Nat. Drainage Cong. Considers the sources of floods, and methods of control by reforestation, reservoirs, and levees. 4000 w. Eng News—April 17, 1913. No. 41336.

Flood Control in the Sacramento Valley, California. Fred H. Tibbitts. Describes the topography, flood conditions, and flood control projects. Map & Ills. 9800 w. Engng & Con—April 9, 1913. No. 41195.

See also Reservoirs, under Water Sup-

ply.
Flood Prevention.

Knight's Landing Cut Project in the Sacramento Valley. An account of a proposed by-pass to divert part of the flow . of the Sacramento River to prevent flooding of cultivated land. 3000 w. Eng Rec—March 15, 1913. No. 40645.

Control vs. Prevention. A symposium of opinions of eminent engineers regarding the most effective means of ending flood losses. 5000 w. Cassier's-July,

No. 43350. 1913.

Prevention Investigations Flood Ohio. Explains plans for controlling about 100 miles of the Miami River and other streams. 2500 w. Eng Rec-July

12, 1913. No. 43655.
Flood Prevention and Water Conservation Measures in Germany. A summary of the principal features of flood control reservoirs and of the laws governing them. Ills. 2500 w. Eng Rec —July 19, 1913. No. 43789.

WATERWAYS AND HARBORS

Floods

Proposed Plan of Flood Prevention for Dayton, Ohio, and the Miami River Valley. Gives the report of the Flood Committee of the Dayton Citizens' Relief Com-2500 w. Engng & Con—Oct. 15, 1913. No. 45892.

Flood Protection for Dayton. Abstract of a preliminary report. Urges co-operation among communities. 2000 w. Eng Rec-Oct. 11, 1913. No. 45809.

See Mississippi River, under Waterways and Harbors.

Flood Protection

Flood Protection Work on the Kansas River at Kansas City, Kans. Edward H. Schultz. Explains the physical characteristics and describes the improvement. 2500 w. Engng & Con-Dec. 4, Map. 1912. No. 38050.

Flood Protection at Kansas City. Everett B. Murray. Illustrates and describes improvement works in the way of levees, bank revetment, and bridge alterations. 2500 w. Eng News—Dec. 26, 1912. No. 38591.

Flood Reservoirs

Relation of the Proposed Pittsburgh Flood Reservoir System to Navigation. Conclusions reported to Congress by a board of engineering officers appointed to determine whether reservoirs at the head waters of the Ohio River would be an aid to navigation. 3000 w. Eng Rec --- May 10, 1913. No. 41956.

Floods

Flood Data in Canadian River Basin, New Mexico. W. B. Freeman and Glenn A. Gray. Considers the relation between rainfall and run-off. 2000 w. Eng Rec —Dec. 21, 1912. No. 38326.

A Review of the Floods of the Lower Mississippi With a Discusison of the Methods of Control by Levees. A. L. Dubuey. Read before the Illinois Soc. of Engrs. & Survs. A review of the evidence and reasoning in defense of levee control. Map. 6000 w. Engng & Con-Feb. 12, 1913. No. 39833.

The Flood of Jan. 9, 1913, at Pittsburgh, Penn. Kenneth C. Grant. Describes the conditions which caused the flood, and the damage. Ills. 3000 w. Eng News—Jan. 30, 1913. No. 39595.

A Birdseye View of Conditions in the Ohio Flood Districts. Reports from various places, with map and illustrations. 4000 w. Eng News-April 17, 1913. No. 41235.

The Wabash River Flood, March 21-April 2, 1913. R. L. Sackett. Gives rainfall data and an illustrated account of damage at Lafayette, Ind. 2500 w. Eng News—April 24, 1913. No. 41621.

The Recent Flood at Columbus. Ohio. Julian Griggs. Map and Description of conditions at Columbus, and illustrated account of the damage by the flood of March 23-27, 1913. Also editorial on need of river regulation, and a letter from Rudolph Hering. 7500 w. Eng News. April 10, 1913. No. 41167.

Results of Recent Flood at Columbus. J. J. Morgan. Maps and illustrated account of the damages to bridges and levees, and plans for improving river channels. 2000 w. Eng Rec-April 19,

1913. No. 41359.

Flood Devastation at Dayton, Ohio. An illustrated account of the inundation of nearly one-half the city by heavy rainfalls and cloudbursts. 2000 w. Eng Rec -April 12, 1913. No. 41185.

The Flood of March 25 at Akron, Ohio. Map and description of the location and report of the damage from the flood. Ills. 1300 w. Eng News — April 10, 1913. No. 41168.

Damage to Structures in the Indianapolis Flood. De Witt V. Moore. Illustrated account, with special reference to the damage to structures. 5000 w. News—April 24, 1913. No. 41625.

The Flood at Indianapolis. De Witt V. Moore. Descriptive account of its progress, with illustrations. 2000 w. News—April 17, 1913. No. 41337.

Effects of the Flood in Indiana Charles Brossman. Gives records of rainfall, river stages and damage to engineering structures. Ills. & Plate. 3500 w. Eng Rec—April 5, 1913. No. 41116.

The Flood in the Middle West. An illustrated account of the effect on electric railways in Indiana, Ohio, Pennsylvania and New York. 13500 w. Elec Ry Jour
—April 5, 1913. No. 41107.
The Flood of March-April, 1913, on the

Ohio River and Its Tributaries. John C. Hoyt. Information concerning the pre-cipitation and flood heights at various points, urging a complete system of river control. 2000 w. Eng News—April 10, 1913. No. 41169.

The Pittsburgh Flood of March 27. Morris Knowles. Gives records of precipitation and flood stages of rivers in various localities. Ills. 2000 w. Eng Rec—April 19, 1913. No. 41360.

Effects of Recent Floods on New York Streams. Robert E. Horton. A study of rainfall and stream discharge, with hydrographs for fourteen rivers. Ills. 3500 w. Eng Rec—April 12, 1913. No. 41184. Floods and the Problems of River Regulation. Charles Whiting Baker. Dis-

cusses the cause of the recent floods, the effect of forests, the responsibility of

Flood Sanitation

man, flood control, the reservoir system, levees, etc. Ills. 4500 May 3, 1913. No. 41782. 4500 w. Sci Am-

The Control of the Mississippi Floods. Ch. D. Townsend. Address delivered be-fore the National Drainage Congress. Considers the sources of floods, and their control by reforestration, reservoirs and levees. Ills. 5000 w. Sci Am Sup—May 3, 1913. No. 41784. The Business Man's Interest in Flood

Protection, River Regulation and Drainage. Frank B. Knight. Read before the Nat. Drainage Cong. Shows the direct interests through the increase of raw material, increased market, the loss of life,

etc. 4500 w. Jour Worcester Poly Inst—May, 1913. No. 42402 C.

The Cause of Floods and the Factors That Influence Their Intensity. Daniel W. Mead. Discusses the cause of floods and some of the reasons for the variation that occurs in the magnitude, results, etc. General discussion. Ills. 12500 w. Jour W Soc of Engrs-April, 1913. 42360 D.

Is Man Responsible for Floods? Edi-

torial discussion of the effect of civilization on the run-off of streams. 1500 w. Eng News-May 1, 1913. No. 41867.

Notes from the Miami Valley. Illustrated notes on conditions at Piqua, Troy. Dayton, Miamisburg, Hamilton, etc. 5000 w. Eng News—May 1, 1913. No. 41870. The Rainfall and Flood Conditions in

Ohio, March 23 to 28, 1913. J. Warren Smith. Gives a special report prepared for the Weather Bureau. Ills. 1200 w. Sci Am Sup-May 10, 1913. No. 41915.

Investigation of Flood Flow on the Watershed of the Upper Wisconsin River -Merrill and Above. Clinton B. Stewart. A study of the character of the soil and topography, the maximum rainfall conditions, and the flow. Maps. 3000 w. Jour W Soc of Engrs—April, 1913. No. 42361 D.

The Cuyahoga River in the Flood of March 25-26, 1913. Edgar B. Thomas. Describes and illustrates the effects of the rainfall and high water in and near Cleveland, O. 1500 w. Eng News-May

1, 1913. No. 41869. How an Industrial Plant Was Saved from the Flood. C. Mengel Struck. Brief illustrated description of how a lumber yard and planing mill was protected by an emergency flood wall. 1500 w. Eng Rec—May 24, 1913. No. 42376. A Report on the Practicability of a

Reservoir System for Controlling Flood Waters from the Upper Tributaries of the Ohio River. Gives the report by a board of engineers which shows material differences in estimates of work from those published by the Pittsburgh Flood 8000 w. Engng & Con-Commission. June 18, 1913. No. 42940.

Flood Flows. Weston E. Fuller. study of the frequency of floods, showing the relation between the catchment area and the magnitude of the flood, and presenting formulae and tables to aid in estimating the probable maximum flood to be expected. 12000 w. Pro Am Soc of Civ Engrs—May, 1913. No. 42910 F. Preventing the Floods. Henry Harrison Suplee. How the nation can save

millions of dollars of useless waste by utilizing the Panama Canal equipment. Ills. 5000 w. Cassier's—June, 1913. No. 42862 B.

Flood Protection at the Illinois Mines. Brief illustrated description of methods employed in protecting the shafts of the O'Gara Coal Co. during the recent floods. 1200 w. Coal Age-May 31, 1913. No.

Floods and Levees at Cairo, Ill. Describes the flood protection works under way and in prospect. Ills. 3000 w.

Eng News—July 17, 1913. No. 43836.
Bridge and Flood Destruction in California. Henry Gratton Tyrrell. Illustrations and notes pertaining to flood destruction in 1907. 2000 w. Ry Engng & Main of Way—Aug., 1913. No. 44359.

The Control of River Floods. C. McD.

Townsend. Read at meeting of Drainage Cong., in St. Louis. Discusses the sources of floods, the influence of forests on stream flow, reservoirs, levees, &c. 4500 w. Can Engr—Aug. 14, 1913. No.

Proposed Plan for Flood Protection at Columbus, Ohio. Describes the preferred plan as given in a preliminary report made by John W. Alvord and Charles B. Burdick. 2500 w. Engng & Con—Sept. 24, 1913. No. 45457.

24, 1913. No. 45457.

The Ohio Valley Flood of March-April,
Jackson. 1913. A. H. Horton and H. J. Jackson. Gives the history of this flood, including comparisons with some earlier floods. Ills. 92 pp. U S Geol Surv—Paper 334. No. 46105 N.

See also Reservoirs, under Water Supply, and Flood Damage, under RAILWAY ENGINEERING, Permanent Way and Buildings.

Flood Sanitation

Methods Employed at Zanesville and Columbus, Ohio, in Restablishing Sanitary Conditions in Flooded Districts. Gives two examples of the application of the rules of the Ohio State Board of Health. 2500 w. Engng & Con—July 23, 1913. No. 43876.

WATERWAYS AND HARBORS.

Levees

Gage Heights

Establishing Ex-Post-Facto Gage Heights. C. F. Brown. Describes in detail methods employed to determine the daily discharge of the St. Joe River at St. Maries, Idaho. Ills. 2500 w. Eng News—May 29, 1913. No. 42563.

Great Lakes

The Livingstone Channel, the Latest Aid to Lake Traffic. R. D. Williams. Illustrated description of the excavation of a new route for downbound vessels from 2000 w. Ir Trd Rev the Great Lakes. (Special.) No. 38739 D. -Jan. 2, 1913. Harbor Machinery.

Developments in Mechanical Haulage in Harbors (Fortschritte und Bestrebungen auf dem Gebiete der Fördertechnik in Häfen). C. Michenfelder. A review of modern attainments in the unloading . and loading of ships. Ills. Serial. 1st part. 5000 w. Zeit des Ver deutscher Ing—Feb. 8, 1913. No. 40535 D.

Harbors

Proposed Inner Harbor Plan for the City of Richmond on San Francisco Bay. Map, section and description of a proposed improvement. 4800 w. Engng & Con—Dec. 4, 1912. No. 38047.

The Harbor Equipment at Basle, and Shipping on the Upper Rhine (Die Rheinhafenanlagen in Basel und die Schiffahrt auf dem Oberrhein). Maps, illustrations and description of wharfage and mechanical equipment of this river port. 3300 w. Schweiz Bau—Nov. 9, 1912. No. 38434 D.

Harbor Works in the Tripolitaine. Illustrated description of the Italian harbor works at Bengasi. 700 w. Engr, Lond-May 16, 1913. Serial, 1st part.

No. 42541 A.

Improvement Work in the Harbor of Harlingen (De werken tot verbetering van de haven te Harlingen). J. Lely. Description of the dike re-construction and revetment adopted. Ills. 3800 w. De Ingenieur — May 17, 1913. No.

Laying Out a Model Harbor. Henry C. Long. Describes plans being developed at St. Petersburg, Fla. 1500 w. Mfrs.

Rec—July 17, 1913. No. 43767.
Electrical Equipment and Conc Construction at Auckland Harbor. Concrete Wilson. Illustrates and describes the plant, building methods, and mechanical

Magazine—Nov., 1913. No. 46306 B.

Harbor Projections and Their Effect
Upon the Travel of Sand and Shingle.
Ernest R. Matthews. Read before the British Assn. Discusses the effect on the coast line of harbor projections, dealing

chiefly with sandy coasts. Ills. 1200 w. Engng-Sept. 19, 1913. Serial, 1st part. No. 45570 A.

Inland Navigation

From Coal Fields to the Gulf. Albert Phenis. Illustrated account of the locks and dams in the Warrior and Tombigbee rivers for the improvement of navigation. 4000 w. Mfrs' Rec-Aug. 28, 1913. No. 44794.

Inland Navigation in Germany from 1888 to 1913 (Die deutsche Binnenschifffahrt von 1888 bis 1913). Oskar Teu-bert. A review of improvements made in canals, locks and shipping in the past twenty-five years. Ills. Serial, 1st part. 5600 w. Schiffbau—July 9, 1913. No. 44630 D.

Navigation in Interior France and Other Countries (La Navigation intérieure en France et à l'étranger). A comparative study of the inland waterways of France, Holland, Canada, Germany, etc. Alls. 3000 w. Tech Mod— June 1, 1913. No. 43070 D.

Harbor Construction at Kobe and Yoko-Wilson T. Howe. hama, Japan. based on a recent visit. Ills. 1000 w. Eng News-Sept. 8, 1913. No. 45224.

Construction Methods Employed in Rebuilding the Jetties at Humboldt Bay. California, with Some Costs. Information from an article by Morton L. Tower in Prof. Mem. 4500 w. Engng & Con—Oct. 8, 1913. No. 45752.

Lake Erie

The Water Level of Lake Erie. Report of the International Waterways Commission on the value of compensating works in the Niagara River. 3000 w. Can Engr—Sept. 18, 1913. No. 45251.

Levees

Concrete Slabs in Levee Construction. E. B. Murray. Illustrated account of work in the Kaw Valley Drainage District, in Kansas. 1500 w. Concrete-Cement Age—Dec., 1912. No. 38156.

Concrete Dikes and Bank Protection on the Missouri River. Edward H. Briefly describes the various steps of progress on methods of regulating the Missouri River, and gives illustrated description of the dike works, and the concrete revetment. 3000 w. Eng News—Dec. 26, 1912. No. 38592.

Levee Construction in the Colorado River Delta and the Rock Fill Dam Method of Closing Crevasses A summary of methods of river control, with maps, based on descriptions by H. T. Cory in a paper before the Am. Soc. of Civ. Engrs.

Lighthouses

WATERWAYS AND HARBORS

Panama Canal

8000 w. Engng & Con—Dec. 11, 1912. No. 38149.

A Suggested Method for Closing a Crevasse in a Levee. C. O. Sherrill. Explains past methods and describes a type of closure using steel sheet piling. 1300 w. Engng & Con—Jan. 29, 1913. No. 39579.

A Discussion of Levee Location, Height and Grade. Two useful tables and discussion of the proper location, height and grade of levees taken from a report of Arthur A. Stiles. 3000 w. Engng & Con—June 4, 1913. No. 42664.

Closure of Beulah Levee Crevasse. A.

Closure of Beulah Levee Crevasse. A.
L. Dabney. Illustrated detailed description of emergency repair work in the lower Mississippi River Valley. 4000 w.
Eng Rec—July 5, 1913. No. 43466.
Large Clam-Shell Dredges; Levee

Large Clam-Shell Dredges; Levee Building Methods and Standards in California. Fred H. Tibbetts. Illustrates and describes the dredges and methods used. 1200 w. Eng News—Sept. 4, 1913. No. 44986.

See Mississippi River, and Shore Protection, under Waterways and Harbors.
Lighthouses

See Panama Canal, under Waterways and Harbors.

Livingstone Channel

Testimony in Re the Livingstone Channel on the Reference of the Governments of the United States and the Dominion of Canada Under Article IX of the Treaty of May 5, 1910. Also report of April 8, 1913, on recommendations in reply to questions submitted. 243 pp. Int Joint Com, Ottawa—May, 1913. No. 42499 N.

Locks

Barge Canal Locks at Lockport, N. Y. Emile Low. Illustrated general description of the two-flight structure and its equipment. 3000 w. Eng Rec—June 14, 1913. No. 42827.

Electrical Equipment of Charles River Locks. Illustrated description of extensive electric motor applications at the lower end of Charles River Basin for operating boat locks connecting the basin with Boston Harbor. 5000 w. Elec Wld—June 21, 1913. No. 43104.

Lock and Dry-dock at Keokuk. Illustrated description of a new type of disappearing gate for one of the largest locks in the world, operated from a central station by compressed air. 3500 w. Eng Rec—July 26, 1913. No. 43931.

Reinforced Concrete Construction on

Reinforced Concrete Construction on the Canal Locks at Hohensaaten (Die Eisenbetonkonstruktionen der Scleppzugschleusen bei Hohensaaten). Herr Bergius. The construction of chamber and retaining walls, piles, etc., used in the locks. Ills. 3200 w. Beton u Eisen—July 1, 1913. No. 44637 E.

See Panama Canal, under Waterways and Harbors.

Madras

I. The Remodelling and Equipment of Madras Harbor. Sir Francis J. E. Spring. II. The Alteration of the Form of Madras Harbor. Hugh Henry Gordon Michell. Describes the construction of one of the most efficient harbors in the East. Two papers discussed together. Plates. 118 pp. Inst of Civ Engrs—Nos. 3964 & 4012. No. 42370 N.

Manchester, Eng.

The Inland Port of Manchester. Describes the physical features and facilities of the port and its development. Ills. 5000 w. Eng News—Dec. 12, 1912. No. 38175.

The Trafford Park Industrial District at Manchester, England. An illustrated account of an industrial enterprise related intimately with the prosperity of the ship canal and the city. 2000 w. Eng News—Dec. 12, 1912. No. 38174.

Mississippi River

Controlling the Mississippi River. Col. C. McD. Townsend. From a paper read at the Interstate Levee Congress. Presents in detail the reasons why the levee system of river regulation has been found superior. 4500 w. Eng News—Oct. 31, 1912. No. 37211.

Discussion of Papers "Flood Protection for Mississippi Valley." 4500 w. Jour Assn of Engng Socs—Nov., 1912. No. 37535 C.

Missouri River

Aids to Navigation on the Missouri River. Frank C. Perkins. Illustrates and describes the development of the regulation works and the concrete improvement of the river, and the use of concrete piles in dam construction. 2200 w. Sci Am Sup—Feb. 15, 1913. No. 39886.

Ore Docks

Reinforced Concrete Ore Docks. Illustrated article dealing with ore-loading docks in general, and particularly modern docks of reinforced concrete. 3500 w. Eng News—Jan. 2. 1913. No. 38778

Eng News—Jan. 2, 1913. No. 38778.
Steel Ore Dock: D. & I. R. R. R. Illustrated description of a large steel dock at Two Harbors. Minn. 1000 w. Eng News—Jan. 2, 1913. No. 38779.

Panama Canal

Annual Report of the Isthmian Canal Commission. Report of George W. Goethals for the year ending June 30, 1912. 68 pages. Isthmian Canal Commission—Nov., 1912. No. 37238 N.

Panama Canal

The Panama Canal. Photographs illustrating progress in construction, and abstracts from Col. Geo. W. Goethal's annual report. Engineering Magazine—Dec., 1912. No. 37792 B.

Extracts from the Annual Report of the Isthmian Canal Commission. From the report by George W. Goethals for the year ending June 30, 1912. Ills. 9500 w. Eng News—Nov. 21, 1912. No. 37726.

A Review of the Methods and Costs of Constructing the Panama Canal During the Past Fiscal Year. Abstract from report of Colonel Goethals. Ills. 7500 w. Engng & Con—Nov. 20, 1912. No. 37700.

Progress on the Panama Canal. Summary of the engineering features from the report of Col. George W. Goethals for the year ending June 30, 1912. Ills. 9800 w. Eng Rec—Nov. 23, 1912. No. 37758.

The Electrification of the Panama Canal. David B. Rushmore. Illustrated account of the extensive application of electricity for the operation of the canal. 2200 w. Sci Am—Nov. 9, 1912. No. 37339.

Culebra Cut and the Problem of the Slides. D. D. Gaillard. An illustrated explanation of the work and the trouble caused by slides. 4000 w. Sci Am—Nov. 9, 1912. No. 37336.

The Gatun Dam and Locks. William L. Sibert. Illustrated description of the construction. 3000 w. Sci Am—Nov. 9, 1912. No. 37335.

Gate Mechanisms of the Panama Canal Locks. Illustrated explanation of the mechanical principles employed and the great size and difficult foundry and machine shop products required. 4000 w. Ir Age—Nov 21, 1912. No. 37722 C.

Marine Lighting Equipment of the Panama Canal. James Pattison. Illustrated description of the system of automatic unattended lights, using dissolved acetyline (Dalén patents). 4500 w. Soc of Nav Archts & Marine Engrs, No 4—Nov. 21, 1912. No. 37687 N.

The Sanitation of the Canal Zone. Dr. A. J. Orenstein. An interesting account of the sanitary work which made possible the building of the canal. Ills. 2500 w. Sci Am—Nov. 9, 1912. No. 37337.

Panama Canal Tolls. Emory R. Johnson. Abstract of an official report. Discusses the operating and maintenance expenses, the military expense and other costs and how they should be met. The rates of toll, etc. 6000 w. Ry Age Gaz—Dec. 6, 1912. No. 38070.

The Panama Canal. Percy F. Martin. First of a series of articles giving an illustrated detailed description of the work, and much related information. 3000 w. Engr, Lond—Nov. 29, 1912. Serial. 1st part. No. 38132 A.

The Panama Canal. Deals particularly with the locks at the Pacific end of the canal. Ills. 3000 w. Engng—Dec. 6, 1912. No. 38246 A.

A Visit to the Panama Canal. E. D. Edmonston. Describes the canal as seen on this visit, explaining the main features. Ills. 7000 w. Pro Am Inst of Elec Engrs—Dec., 1912. No. 38514 F. Hydrology of the Panama Canal. Caleb

Hydrology of the Panama Canal. Caleb Mills Saville. A record of certain facts bearing on the hydrology and other natural phenomena of the Chagres River Basin, showing that the water supply of Gatun Lake is sufficient for any probable demands of navigation. Maps and Ills. 20000 w. Pro Am Soc of Civ Engrs—Jan. 1913. No. 39388 F.

Mining on the Panama Canal. C. R. Forbes. Notes on the method of working in the big cut at Culebra. Ills. 2000 w. Min & Sci Pr—Dec. 28, 1912. No. 28763.

Unit Costs of Construction on the Panama Canal for the Fiscal Year Ending June 30, 1912. Information from the report of Col. Goethals. 5000 w. Engng & Con—Jan. 1, 1913. No. 38767.

Some Statistics of Performance of

Some Statistics of Performance of Stone Crushers, Cableways, Cranes and Concrete Mixers at Panama. Information from a report by Mr. Ad. Faurè, covering the year ending June 30, 1912. 2000 w. Engng & Con—Jan. 8, 1913. No. 38935.

The Engineering and Electrical Features of the Panama Canal. M. C. Turpin. Illustrates and describes features of interest. 3500 w. So Elect'n—Jan., 1913. No. 39214.

Panama Canal Lighting Plan. Walter F. Byer. Outlines the plan of illuminating this waterway and criticises the paper by James Pattison, read before the Soc. of Nav. Archts. & Marine Engrs. 2000 w. Marine Rev—Jan., 1913. No. 39195 C.

Marine Rev—Jan., 1913. No. 39195 C.
Panama Traffic and Tolls. Emory R.
Johnson. The unwisdom of toll exemption for coastwise ships. 4000 w. Jour W Soc of Engrs—Jan., 1913. No. 39955 D.

The Panama Canal in International Law. H. S. Knapp. A discussion of the present treaty obligations of the United States with respect to the canal. 10500 w. Pro U S Nav Inst—March, 1913. No. 40919 E.

Lock Gates for the Panama Canal. Illustrated description of the 630-ton steel gates, 82 feet high, and of the special

Piers

methods adopted for their fabrication. 4500 w. Eng Rec-March 1, 1913. No. 40259.

The Panama Canal. David A. Molitor. Reviews the history of the Isthmian canal discusses briefly the five projects, and gives related information. Ills. 8000 w. Ap Sci-March, 1913. No. 41258 C.

The Panama Canal. Franklin Jones. Illustrates and describes interesting mechanical features. 5500 Mach, N Y—April, 1913. No. 40978 C.

The Slides in the Central Excavation of the Panama Canal (Les époulements de la tranchée centrale du Canal de Panama). A. Dumas. A review of the conditions at Culebra, and the vast amount of work caused by the slides. Ills. 7000 w. Genie

Civil—March 22, 1913. No. 41524 D.
The Panama Canal. The present number deals particularly with the locks and plants for their construction. Ills. and

Plates. 6000 w. Engng—May 9, 1918. Serial. 1st part. No. 42287 A. The Panama Canal. R. E. Bakenhus. Gives a résumé of the early history, describes the physical characteristics of the route, the choice of type, and a general description of the canal and its construc-tion. Ills. maps and plans. 78 pp. Pro U. S. Nav Inst—June, 1913. No. 43174 E.

The Problem of Panama. James Nisbet Hazlehurst. Brief review of the work, especially the excavation of Culebra, describing the geology of that section. 5500 w. Mfrs' Rec—May 29, 1913. No. 42565.

Electrifying Panama Canal. Outlines the elaborate plans for electrical energy. Ills. 1800 w. Marine Rev-Aug., 1918. No. 44285 C.

The Chain Fenders for the Panama Canal. Illustrates and describes details of the hydraulically operated devices for bringing ships to rest and thus protecting the lock gates. 1500 w. Ir Age-Aug. 7, 1913. No. 44203 C.

The Panama Canal as It Relates to the Treaties. C. M. Chester. Information concerning the treaties and their intentions, and discussion of the exemption of U. S. coasting trade from tolls, the Monroe Doctrine, &c. 3300 w. Pro Engrs' Club of Phila—July, 1913. No. 44337 D.

The Navy and the Panama Canal. Harry S. Knapp. The writer's views of how the canal will affect the strength of the navy. 7500 w. Pro U S Nav Inst -Sept., 1913. No. 45420 E.

Geology of the Panama Isthmus and the Caribbean Archipelago. An interesting explanation of the geological changes which rendered it possible to construct the Panama Canal. 2000 w.

Engrg—Aug. 22, 1913. No. 44921 A.
The Truth About the Culebra Cut Slides, Panama Canal. A. S. Zinn. Describes the nature of the earth slides and criticizes the plan proposed by George S. Rice. Also, short article by Donald F. McDonald. 3000 w. Eng News—Aug. 28, 1913. No. 44883.

Earthquakes and the Panama Canal. Donald F'. MacDonald. A study of the geological conditions on the isthmus and what they indicate. Ills. 2500 w. Sci Am—Oct. 18,1913. No. 45920.

The Earthquake at Panama. Editorial discussion of the geology of the region and the possible effect of earthquakes on 1800 w. Engngthe Panama Canal.

Oct. 10, 1913. No. 45984 A.

On Landslides Accompanied by Upheaval in the Culebra Cut of the Panama Canal. Vaughan Cornish. Read before the British Assn. Describes the upheavals and landslides that have given so much trouble, discussing the causes and the outlook. 2500 w. Engng—Sept. 26, 1913. No. 45741 A. Some of the Economic Effects of the

Panama Canal. Prof. Kirkaldy. stract of a paper read before the British Assn. Briefly considers the local effects, and the effect on world trade. 1500 w. Jour Soc of Arts-Oct. 17, 1913. No.

The Engineering Aspect of the Panama Canal at the Present Time, 1913: William T. Taylor. Briefly reviews the history of Panama and of the canal, describing the engineering features, proposed method of operation and related subjects. Ills. 7000 w. Jour Soc of Arts—Oct. 3, 1913. No. 45829 A.

See also Rock Slides, under Construction; and Coal Trade under MINING AND METALLURGY, Coal and Coke.

Paris

Straightening the Walls of a Number of River Roads along the Seine through Paris (Transformation en ports droits d'un certain nombre de ports en tirage de la Seine dans la traversée de Paris). M. Arana. Details of retaining walls built for improving the river and straightening the channel. Ills. and Plates. 11000 w. Ann de Ponts et Chaussées-Sept.-Oct., 1912. No. 37490 E + F.

Structural and Mechanical Features of a Railroad Freight Pier. Illustrated description of a pier at Hoboken, N. J., for the D., L. & W. R. R. A fireproof steel and cement structure with cinderfilled deck, and mechanical equipment for handling freight. 2000 w. Eng Rec -May 24, 1913. No. 42379.

River Control

New Freight Pier at Communipaw, N. J. Illustrated description of a modern fireproof structure of concrete and steel construction for the reception and storage of export business. 1500 w. Age Gaz—May 9, 1913. No. 41947. The New York Pier Problem.

and explanation of existing conditions, and an account of the towing tests made in the experimental tank at the Washington Navy Yard. 3000 w. Engr, Lond
—May 16, 1913. No. 42543 A.

Modern Pier Construction in New York Charles W. Staniford. cusses the growth and development of the harbor, the types of pier construction, new pier construction practice, column foundations, and requirements. Ills. 4000 w. Pro Am Soc of Civ Engrs—May, 1913. No. 42912 F.

Modern Pier Construction in New York

Harbor. Discussion of the paper by Charles W. Staniford. 5000 w. Pro Am Soc of Civ Engrs—Sept., 1913. 45527 F. No.

Modern Pier Construction in New York Harbor. Continued discussion of the paper by Charles W. Staniford. Ills. 5500 w. Pro Am Soc of Civ Engrs-Oct, 1913. No. 46346 F.

Commonwealth Pier, Boston. Illustrated description of an exceptionally long pier, constructed in six months. 1800 w. Munic Jour—June 5, 1913. No. 42675.

Commonwealth Pier 5, Boston. Drawings and description of a 400 by 1200 ft. pier, with a two-story steel shed on solid fill and pile foundations between docks 40 ft. deep. Ills. 2000 6, 1913. No. 44999. Ills. 2000 w. Eng Rec-Sept.

Pier for the Outer Harbor at Chicago. Gives particulars of the pier construction as shown by the plans and specifications just issued. Drawings. 700 w. Eng News—Sept. 18, 1913. No. 45222.
Coal Piers on the Atlantic Seaboard.

report on the plants at New York, illadelphia, Baltimore and Norfolk, Philadelphia, their construction, operation, cost, and other information. Ills. 13000 w. Pro Am Soc of Civ Engrs—Oct., 1913. No. 46342 F.

See also Foundations, under Bridges. Reinforced-Concrete Pier at Port au Prince, Haiti. Illustrates and describes a structure 2326 feet long. 1200 w. Eng Rec—May 31, 1913. No. 42646.

Calculation on Pier Walls (Berekening van kaaimuren). M. E. H. Tjaden. The derivation of formulæ for determining the thickness of such sea walls. Ills. 4500 w. De Ingenieur—Jan. 25, 1913. No.

See also Foundations, under Bridges.

Portland, Ore.

Portland, Oregon: Its Channel, Approach, Harbor, Railroad Facilities, Navigable Waterways, and Tributary Territory. G. B. Hegardt. Map, drawings and description. 16000 w. Jour Assn of Engng Socs—Jan., 1913. No. 39358 C.

Strasbourg's River Ports (Le Port Flurial de Strasbourg). Charles Aubert. The importance of its location on the Rhine with connecting canals to the Marne and the Rhone, and a review of the tonnage handled. Ills. 4500 w. Génie Civil—Nov. 2, 1912. No. 87519 D.

The Port of Antwerp (Il porto marit-timo di Anversa). Cesare Chiodi. Re-view of the mechanical features for loading and unloading at this port, with brief mention of recent improvements. Serial, 1st part. 1500 w. Monit Tecnico Dec. 20, 1912. No. 39094 D.

Construction at the Port of Antwerp (Der Ausbau des Hafens von Antwerpen). W. Kaemmerer. Brief outline of the work under construction. Ills. 1500 w. Zeitschr des Ver deutscher Ing— Jan. 11, 1913. No. 40041 D.

Bulkhead and Pier for the New Port of San Diego, Calif. Describes improvements under construction at this Pacific port. Ills. 1700 w. Eng News—March 13, 1913. No. 40654. Reviews of 1912

Harbors and Waterways, 1912. views the work of the past year in the 4000 w. Engr, Lond United Kingdom. -Jan. 3, 1913. Serial. 1st part. 39161 A.

Rhone

Report on Navigable Waterways in the Rhone Valley (Rapport sur les voies navigables de la vallée du Rhône). Ch. Discusses present and future Levand. canalization projects along the Rhone and its tributaries. Plate. 30700 w. Mem Soc Ing Civ de France-Oct., 1912. No. 38481 Ğ

See also Toronto, under Waterways and Harbors.

River Banks

Transverse Banks and Their Influence on Rivers (La pente transversale et son influence sur l'état des rivières). R. H. Gockinga. Especially considering the Gockinga. Especially considering the action of the banks on curves; distinguished from longitudinal banks. Ills. 8000 w. Ann d Ponts et Chaussées-Jan., 1913. No. 41508 E + F.

River Control The Control of Rivers by Storage Reservoirs. Gives recent examples of effective works, taken from a report made by the Flood Commission of Pittsburgh. River Improvement.

WATERWAYS AND HARBORS

Seine

2500 w. Engr, Lond—May 16, 1913. No. 42542 A.

River Improvement

Medway Improvements. Map and illustrated description of a scheme, costing about 40,000£, for the improvement of navigation on this river in England. 1500 w. Engng—Nov. 22, 1912. No. 38029 A.

The Improvement of the Cuyahoga River at Cleveland, Ohio. From the recently issued report of the commission appointed to investigate the question. Outlines the most feasible projects. Map. 1500 w. Eng News—March 20, 1913. No. 40742.

The Improvement of the Neponset River in Massachusetts. Edmund M.

The Improvement of the Neponset River in Massachusetts. Edmund M. Blake. Information concerning bids received and plans for the work, giving hydraulic data for the proposed new channel, and related matters of interest. Ills. 1500 w. Engng & Con—March 12, 1918. No. 40450.

River Improvement. E. T. Ireson. Gives five principal divisions of river improvement, discussing methods. 6000 w. Ap Sci—Sept., 1913. No. 46115 C. See Dams, under Water Supply.

River Navigation

See also Flood Reservoirs, under Waterways and Harbors.

River Regulation

River Cleaning and Regulation in Germany. Charles Saville. Read before the Am. Pub. Health Assn. Explains conditions in the Emscher district, the formation of the Emscher Federation and the statute under which it operates. 3500 W. Eng Rec.—Nov. 9, 1912. Serial. 1st Part. No. 37354.

The Ottawa River Storage Systems. J. A. Macdonald. Describes a scheme to study the flow for the production of power, to increase the depth for navigation, and to improve the potability of the water. 1200 w. Can Engr—Aug. 7, 1913. No. 44281.

See also Floods, under Waterways and Harbors.

Rotterdam

Enlargement of the Rotterdam Harbor in the Last Five Years (De uitbreiding van de Rotterdamsche haven in de laatste 5 jaren). A. C. Burgdorffer. A comprehensive statement of the classes of work done in this large undertaking, including dredging, retaining walls, buildings, etc. Ills. and plates. 15600 w. De Ingenieur—April 19, 1913. No. 42163 D. Sand Bars

The Transport and Settlement of Sand in Water, and a Method of Exploring Sand Bars. J. S. Owens. Read before the British Assn. Describes phenomena

accompanying the transport and settlement of sand in water. 2500 w. Engr, Lond—Sept. 26, 1913. No. 45748 A.

San Francisco

Port Improvements at San Francisco. Frank G. White. General description of past, present, and proposed developments. 2500 w. Eng Rec.—July 12, 1913. No. 43661.

San Francisco Wharf and Dock Construction. Jerome Newman. Illustrated account of improvements under way and proposed. 2000 w. W Engng—July, 1913. No. 44044 C.

San Pedro, Calif.

Harbor Development at San Pedro, California. G. C. Munoz. Gives construction details of the wharves in the outer harbor of Los Angeles, with a brief description of the whole port. Ills. 18000 w. Eng Rec—May 17, 1918. No. 42219.

Seattle

Harbor Development in Seattle. William L. Kidston. Illustrated general outline of six projects being undertaken by the port commission. 2000 w. Eng Rec —Aug. 23, 1913. No. 44550.

Sea Walls

Reinforced Concrete Sea Defences. John Switzer Owens and Frederick James Wood. Describes work on the Sussex coast, England. Ills. 7000 w. Inst of Civ Engrs—No. 3998. No. 39295 N.

Civ Engrs—No. 3998. No. 39295 N.
The Municipal Quay Wall, Oakland,
California. Thomas E. Risley. Illustrates
and describes a wall of the gravity type
and its construction. 1200 w. Eng News
—Feb. 13, 1913. No. 39861.

Sedimentation

The Settlement and Transport of Sand in Water. Dr. J. S. Owens. Read before the Geol. Sec. of the British Assn. Describes experiments on the effect of temperature of water upon the rate of settlement of sand, and on the rate of transport of sand along the bottom and its accompanying relation to the velocity of the current. 3500 w. Engng—Dec. 20, 1912. No. 38893 A.

Observations on the Deposition of Gravel in Canals and Streams (Observations sur les dépots de graviers dans les canaux et les cours d'eau). M. Hoc. Comprehensive study on sedimentation with concrete examples. Ills. Serial, 1st part. 5600 w. Genie Civil—Jan. 4, 1913. No. 39088 D.

Seine

The Maritime Seine and the Port of Rouen (La Seine maritime et le Port de Rouen). L. Sekutowicz. The progress realized in the development of navigation since 1900, and the work projected. Ills.

WATERWAYS AND HARBORS

Terminals

5500 w. Genie Civil-July 26, 1913. No. 45343 D.

Shore Protection

Methods and Cost of Mattress Construction and Abattis Dike Work on the Lower Mississippi. Sketch maps and description of work with cost data. 5500 w. Engng & Con-Nov. 13, 1912. No. 37561.

Method and Cost of Revetting Bank of Missouri River at Williston, N. D. W. B. Irwin. Illustrated description of a brush mat protection devised for this work. 1600 w. Engng & Con—Oct. 30, 1912. No. 37199.

Prevention of Percolation Through the White Oak Levee, Mississippi River, by Dove-Tailed Sheet-Piling. Brief illustrated description of a new form of levee construction. 600 w. Engng & Con— Oct. 30, 1912. No. 37198. Protective Work on the Isar Bluffs near Munich (Die Sicherungsarbeiten an

der Isarsteilhängen bei München). Herr Describes the various types of revetment and other devices used to pre-

went scour. Ills. 2800 w. Beton u Eisen
—Oct. 21, 1912. No. 37429 E.

A Simple and Inexpensive Form of
River Bank Protection Against Scour.
Arthur Goldstar in the Iowa Engr. Describes diversion dams used to solve this problem. Ills. 600 w. Engng & Con— Dec. 18, 1912. No. 38316.

Open Pile Dams and Reinforced-Concrete Revetments on the Missouri and Mississippi Rivers (Offene Pfahldämme und Ufersicherungen aus Eisenbeton am Missouri und Mississippi). M. von Pagenhardt. Describes methods of erecting pile dams and concrete facings. Ills. 2200 w. Zeitschr des Ver deutscher Ing—Dec. 14, 1912. No. 39036 D.

Concrete. Bank Protection for Deep Rivers. B. Okazaki. Describes work on a deep river by using a concrete mattress. Ills. 1500 w. Eng News—March 13, 1913. No. 40656.

Foreshore Protection by Reinforced Concrete Groins. John S. Owens and Frederick James Wood. Abstract of a paper before the Inst. of Civ. Engrs. Describes works on the Sussex coast of England. Ills. 2500 w. Eng News—April 3, 1913. No. 41067. Recent Plans for the Protection of Sea

Coasts and the Banks of Rivers and Canals (Moderne opere di difesa per le spiagge marine, per le sponde dei fiumi e dei canali). Suggested revetments, using reinforced concrete. Ills. 2800 w. Il Cemento—March 15, 1913. No. 41532 D. Methods and Costs of Building Shore Protections on the Upper Mississippi

River. Charles W. Durham. Illustrated description of methods used, with statement of cost. 3000 w. Engng & Con—April 9, 1913. No. 41193.

The Use of a Plank or Lumber Apron Mat for Shore Protection on the Upper Mississippi River. Charles W. Durham. Describes the use and construction of plank mats, made necessary by the scarcity of brush. Ills. 1500 w. Engng & Con—Aug. 13, 1913. No. 44349.

See also Reclamation, under Construc-tion, and Levees, under Waterways and

Harbors. South Africa

South African Railways and Harbors. W. W. Hoy. Information from the annual report for 1912. 4000 w. Ry Gaz, Lond—Oct. 10, 1913. No. 45974 A.

South America

New Large South American Harbors (Les grands ports récents de l'Amérique du Sud). Alfred Jacobson. Describes the improvements at the ports of Para, Pernambuco and Bahia. Ills. Serial. 1st part. 6000 w. Genie Civil—May 3, 1913. No. 42194 D.

Stream Gaging
Artificial Control for Stream Gaging Stations. C. Robert Adams. Describes an innovation for determining the flow of small streams in rough beds. Ills. 2000 w. Eng News—June 26, 1913. No. 43312.

Submarine Excavation Rock Excavation at Sydney Harbor, Australia. A. P. Smith. Illustrated description of methods of submarine rock excavation, potting for piles, and other uses of compressed air. 1500 w. Compressed Air—Aug., 1913. No. 44338.

Method and Costs of Drilling and Blasting Subaqueous Flint Rock. J. E.

Hall. Describes drilling and blasting a channel in the Tennessee River. Ills. 2500 w. Engng & Con-Oct. 8, 1913. 45751.

Terminals

What Constitutes a Steamship Terminal. H. McL. Harding. Abstract of a paper read before the Nat. Rivers & Harbors Congress. Considers the elements of Jan., 1913. No. 38812 C.

The Hughes Terminal on the Delaware River at Philadelphia. H. McL. Harding.

Information concerning a proposed terminal. Plans. 2000 w. Eng News—Feb. 13, 1913. No. 39859.

An Ocean Terminal for the South. L. C. Talmage. Illustrated description of Texas City harbor developments. 1500 w. Sci Am Sup-Feb. 22, 1913. No. 40109.

Tidal Lands

MISCELLANY

Design

Tidal Lands

The Use of Vegetation for Reclaiming Tidal Lands. Gerald O. Case. An explanation of how plants and trees prevent coast erosion, arrest the sand and build up land. 3000 w. Engng—Aug. 22, 1913. Serial, 1st part. No. 44923 A.

Tidal Phenomena

Tidal Phenomena in the Harbor of New York. H. de B. Parsons. A study of the tidal actions, with maps, diagrams and tables. 20000 w. Pro Am Soc of Civ Engrs—April, 1913. No. 41646 F.
Tidal Phenomena in the Harbor of

New York. Discussion of the paper by H. deB. Parsons. Map & Ills. 3000 w. Pro Am Soc of Civ Engrs—Aug., 1913. No. 44790 F.

Toronto

Toronto Harbor Improvement. and illustrated description of proposed improvements. 3500 w. Can Engr-Nov. 21, 1912. No. 37775.

Towage

An Interesting Proposal for Electric Traction on the Canals of Pavia (Una interessante proposta di trazione elettrica sul Naviglio Pavese). Mario Beretta. A suggestion for towing by means of a trolley system along the canal banks. Ills. 5000 w. Monit Tec—May 30, 1918. No. 43093 D.

United States Waterways

Water Transportation, Rail Rates and the Inter-State Commerce Commission. John Ruddle. Considers the principles of economics that should be applied and discusses from an economical point some features bearing upon the development of waterways. 3000 w. Int Marine Engng -Nov., 1912. No. 87171 C.

Waterfronts

The Development of the Oakland, Cal., Municipal Waterfront. William Clyde Willard. Map, illustrations and account of the development. 5500 w. 1 Con—July 16, 1913. No. 43820. Engng &

Waterways

The South's Interest in Improved Waterways. Joseph E. Ransdell. Explains the need of improving this well watered country. 2000 w. Mfrs' Rec—March 27, 1913. No. 41557 N.

Wave Action

Ocean Waves, Sea-Beaches, and Sand-nks. Vaughan Cornish. The present number considers the height, length, and speed of the highest waves produced in deep sea by a wind of given velocity. 3500 w. Jour Soc of Arts—Nov. 1, 1912. Serial. 1st part. No. 37385 A.

Wharf-Bulkhead

An Economical Wharf-Bulkhead. William M. Torrance. Illustrated description of a novel structure at Savannah, Ga., constructed of reinforced concrete on timber piling. 1000 w. Eng News—Oct. 9, 1913. No. 45799.

Wharves

Concrete Quay Wall on a Coral Foundation. Illustrated description of a quay wall recently built at the Key West Naval Station, Florida. 1500 w. Eng Rec-Nov. 9, 1912. No. 37358.

Quay Extension Works at Newcastleupon-Tyne. Hubert Laws. Read before the Inst. of Munic. & Co. Engrs. Plans and detailed description of recent improvements. 6000 w. Surveyor—May 9, 1913. No. 42279 A.

MISCELLANY

Agriculture

Farming with Dynamite. Xeno W. Putnam. Illustrated account of a novel use for explosives. 3500 w. Cassier's-July, 1913. No. 43351.

Alaskan Boundary

The Settlement and Survey of the Alaskan Boundary. J. A. Flemer. A review of the indeterminate nature of the boundary from the purchase description; the work of the Boundary Commission, and the methods adopted in the survey. Ills. 5000 w. Engineering Magazine - May, 1913. No. 41631 B.

American Engineering in 1912. present number reviews the iron and steel industry, mechanical engineering, mining, irrigation and drainage, rivers, canals and docks, and marine engineering. 4500 w.

Engr, Lond—Jan. 31, 1913. Serial, 1st part. No. 39814 A.

British Parliament

Engineering Schemes in Parliament, 1913. Reviews the schemes, other than railways, which are being promoted. 3000 w. Engr, Lond—Jan. 17, 1913. No. 39488 A.

Caisson Disease

A Symposium on Caisson Disease. Official abstracts of papers, presented before the Int. Cong. on Hygiene and De mography. The state of the art and possible improvements are considered. 2000 w. Eng News—Nov. 7, 1912. No. 37318.

Design
The Competition for Survival Between
Fingineering Design. Differing Types of Engineering Design.
Walter Fisher. Discusses competing

Forest Fires

MISCELLANY

Sand Dunes

ideas in engineering fields. 2500 w. Cornell Civ Engr-Oct, 1913. No. 46295 C.

Forest Fires

Forest Fires: Their Causes, Extent and Effects, with a Summary of Recorded Destruction and Loss. Fred G. Plummer. Ills. 39 pp. U S Department of Agriculture Bul. 117—Oct. 23, 1912. No.

Methods and Apparatus for the Prevention and Control of Forest Fires, as Exemplified on the Arkansas National Forest. Daniel W. Adams. Describes methods used. Ills. 27 pp. U S Dept of Agri, Bul. 113-Nov. 8, 1912. 3788Ó N.

Forestry

Forestry Work of U. S. Government. Reviews the work of the Department of Agriculture in forest protection and development. 2500 w. Eng Rec—Dec. 21, 1912. No. 38321.

Forests

Forests and Their Effect on Climate, Water Supply and Soil. J. C. Stevens. Treats the subject of precipitation, runoff, erosion, etc., and the relation of the forests and gives data. 12700 w. Jour Assn of Engrg Socs—July, 1913. No. 43996 C.

Forest Service

Review of Forest Service Investigations. A résumé of the character and progress of the work. 92 pp. U. S. Forest Service, Vol. II—April 25, 1913. No. 42481 N.

Geology

Engineering Applications of Geology. Edwin C. Eckel. Discusses the influence on the topography, structure and materials. 2500 w. Eng Rec.—June 14, 1913. Serial, 1st part. No. 42829.

The Progress of Engineering in the East. First of a series of articles dealing with matters of engineering interest in India. Ills. 2500 w. Engr. Lond— Feb. 21, 1913. Serial. 1st part. No. 40315 A.

Meteorology
The Importance of Meteorological Data in Engineering. George S. Bliss. Outlines the importance of the work of the Weather Bureau showing the increasing use and value of the information furnished. Discussion. 4500 w. Pro Engrs' Club of Phila-April, 1913. No. 42363 D.

Montana

Annual Address. Robert A. McArthur. President of the Montana Society reviews the engineering progress in the State during 1912. 6500 w. Jour Assn of Engng Socs-Aug., 1913. No. 44518 C.

Mosquitoes

The Habits of Mosquitoes. H. G. F. Spurrell. Shows the part played by mosquitoes in the transmission of disease. methods of destruction, and other information. 3800 w. Min & Sci Pr—Feb. 15, 1913. Serial, 1st part. No. 39965.

Mosquito Extermination

Mosquito Extermination and Its Problems. Eugene Winship. Describes the essentials of success and reviews the progress of the work. Ills. 4500 w. Eng Rec-May 3, 1913. No. 41845.

National Control

A National Board of Engineering Con-Two prize essays on the Formation of a National Engineering Service. 8500 w. Can Engr-Jan. 23, 1913. No. 39408.

Philippines

A Talk on the Philippine Islands. L. Lundgren. Explains the conditions and government, describes the engineering work, and gives interesting informa-tion. Ills. Short discussion. 4000 w. Jour W Soc of Engrs-Dec., 1912. 39336 D.

Research

Concerning Engineering Researchthe Useless and the Useful. Editorial criticism, illustrating points discussed by examples. 2500 w. Eng News—July 3, 1913. No. 43437.

Sand Dunes

Consult Classification of the Index. See page 9.

Sand Dunes. Illustrated account of how they are reclaimed in Europe and in the United States. 1000 w. Sci Am-June 28, 1913. No. 43200.

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Antenna

COMMUNICATION

Paris

Antennae

Experiments with Umbrella Antenna. Joseph O. Mauborgne. Also editorial. Gives results of a series of tests on radiotransmission efficiencies from this type of antenna. 2000 w. Elec Wld—Jan. 4, 1913. No. 38834.

Antenna Resistance. L. W. Austin. Describes methods of investigation employed. 1000 w. Bul Bureau of Stand—March 15, 1913. No. 42933 N.

Automatic Éxchanges

Recent Developments in Automatic Exchange Telephone Systems. G. H. Green. Describes the fundamental principles of modern systems and gives details of the 3-wire and 2-wire Strowger systems and features of interest in recently opened exchanges. Ills. 2500 w. Elect'n, Lond—Nov. 8, 1912. Serial. 1st part. No. 37634 A.

Combined Service

The Joint Use of Wires for Telephone and Telegraph Service. H. S. Warren. Discusses the possibilities of increased efficiency and economy by cooperation between these two systems of communication. Diagrams. 1200 w. Elec Jour—Sept., 1913. No. 45099.

Conductors

Inductance and Capacity of Linear Conductors and the Determination of the Capacity of Horizontal Antennae. Louis Cohen. Derives expressions for the capacities of various arrangements of linear conductors, and formulae for the antennae. 1500 w. Electr'n, Lond—Feb. 14, 1913. Serial, 1st part. No. 40117 A.

Development
Telegraphy, Telephony and Signalling
(Telegraphie, Telephonie und Signalwesen). Rudolf Franke. A very brief
convarison of early and later systems.
2100 w. Elek u Masch (Special)
March, 1913. No. 41496 D.

Earth Antennae

Transmission Experiments with Earth

Antennae. F. Kiebitz. Abbreviated translation. Explains methods used and gives results of experimental investigation. 2500 w. Elect'n, Lond—July 18, 1913. No. 43955 A.

Exchanges.

The Semi-Automatic Telephone Exchange in Amsterdam (De half-automatische telefooninrichting van Amsterdam-Zuid). W. A. J. van den Hurk. Detailed description of this installation. Ills. 8500 w. De Ingenieur—Jan. 4, 1913. No. 40575 D.

Fire Alarms

Milwaukee Fire and Police Alarm. W. S. Burnett. Describes the fire and police alarm system and its activities, the equipment of the department and the duties of the employers. Ills. 4000 w. Munic Jour—Jan. 2, 1913. No. 38788.

Great Britain

The Postmaster-General's Annual Report. Extracts referring to telegraphy, wireless telegraphy, and telephony. 5800 w. Elect'n, Lond—Dec. 13, 1912. (Special.) No. 38844 D.

Interference

Progress Report on Study of Inductive Interference. Describes equipment and thorough tests made by Committee of Calif. Engrs. 2000 w. Telephony—Oct. 18, 1913. No. 45951.

Longitude

Determination by Radio-telegraphy of the Difference of Longitude Between Paris and Bizerte. MM. Lancelin and Tsatsopoulos, under direction of M. H. Renan. Description and installation of the instruments and of the apparatus. 13500 w. Pro U S Nav Inst—Sept., 1913. Serial, 1st part. No. 45424 E.

Paris

The Extension of the Telephone System in Paris (L'extension du réseau telephonique de Paris). G. Viard. Detailed description of the recently completed inter-

Radiotelegraphy

COMMUNICATION

Radiotelegraphy

urban bureau. Ills. 4800 w. Civil—July 12, 1913. No. 43579 D. Genie

The International Radio Conference of London. D. W. Todd. Report of this conference where 29 nations were represented. 8500 w. Jour Am Soc of Nav Engrs—Nov., 1912. No. 38304 H.

Efficiency of "Earths" in Radio-telegraphy. Charles A. Culver. Report of experimental investigations. $1\bar{2}00$ Elec Wld—Dec. 21, 1912. No. 38857.

Signal Practice in Modern Radiotelegraphy (Cenni pratici sui moderni apparati radiotelegrafici). G. Pession. Discussion on sending and receiving apparatus. Ills, 16000 w. Rivista Marittima-Oct., 1912. No. 38494 E + F.

Radiometry

Instruments and Methods Used in Radiometry. W. W. Coblentz. Aims to give the latest attainments in the construction of instruments used in measuring spectral radiation. Ills. 15600 w. Bul Bureau of Stand—March 15, 1913. No. 42932 N.

Radiotelegraphy

Some Developments in Wireless. John Hays Hammond, Jr. The present number discusses the problem of selectivity, and present success in avoiding interference. 1500 w. Sci Am—Nov. 23, 1912.
Serial. 1st Part. No. 37733.
Sparkless Wireless Telegraphy (La

télégraphie sans fil sans étincelles). Duparc. Present efforts by American and German specialists to obtain oscillations of 50,000 per second, and the effect of such periodicity. Ills. 3700 w. Genie Civil—Oct. 12, 1912. No. 37515 D. Directive Wireless Telegraphy. F.

Addey. Abstract of paper read before the Inst. of P. O. Elec. Engrs. Discusses their chief uses and describes methods. 2200 w. Elect'n, Lond—Dec. 27, 1912.

No. 38909 A.

Bridging Australia by Wireless. Alfred Gradenwitz. Illustrates and describes the new station at Fremantle. which communicates with Sydney. a distance of 2500 miles. Elec Rev, Lond-

Jan. 3, 1913. No. 39136 A.

International Time and Weather Radio-Telegraphic Signals. Wm. I. S. Lockyer. The action of the French government in distributing such signals is considered, describing two signals being daily distributed from the Eiffel Tower, Paris, and from Norddeich-Wilhelmshaven, showing the different systems. Explains the full international system to be put into operation July 1, 1913. 2200 w. Nature—March 13, 1913. No. 40800 A.

The "Lodge-Chambers" System of

Wireless Telegraphy. F. J. Chambers. Illustrated detailed description. 2200 w. Elect'n, Lond-March 14, 1913. Serial. 1st part. No. 40810 A.

The Arlington Radio Station. D. W. Todd. Illustrated detailed description of this station and its equipment, with re-lated subjects of interest. 6500 w. Jour Am Soc of Nav Engrs—Feb., 1913. No. 40859 H.

United States Navy Wireless Station. S. M. Kintner, E. D. Forbes, F. H. Kroger, and J. L. Hogan, Jr. Describes service trials and operating features of the high-powered radio station at Arlington, Va. 2500 w. Elec Wld-April 5, 1913.

No. 41108.

The Developments in Wireless Telegraphy (Die entwicklung der drahtlosen Telegraphie). Max Riethoffer. The work of Hertz, Marconi, Crookes and earlier investigators, and the present scope. 4000 w. Elek u Masch (Special) — March, 1913. No. 41497 D.

The Advisory Scientific Committee on Radio-Telegraphy. Gives report of the committee appointed by the Postmaster-General to consider the merits of the exciting systems of long distance wireless telegraphy. 4000 w. Elect'n, Lond —May 9, 1913. No. 42275 A.

Quantitative Results of Recent Radio-Telegraphic Tests Between Arlington, Va., and the U. S. S. "Salem." John L. Hogan, Jr. Considers features of interest in trials made to determine the re-liable communication range. 4000 w. Elec Wld—June 21, 1913. No. 43105.

Wireless Telegraphy (La Télégraphie sans Fil). M. E. Girardeau. Discussing first, the application of resonance, and second, long distance, quick service operation. Ills. 11,000 w. Mem Soc Ing Civ de France—March, 1913. No. 43076 G.

Obligatory Equipment of Ships With Wireless Stations (Obligatorische Aus-rüstung der Seeschiffe mit funkentele-graphischen Bordstationen). H. Thurn. The causes and enforcement of the laws requiring passenger ships to have adequate equipments. 4000 w. Schiffban—May 28, 1913. No. 43023 D.

Development and Present State of Radiotelegraphy and Radiotelephony. (Sviluppo e stato attuale della radiotele-grafia e della radiotelefonia). Summary of an address by Prof. Giuseppe Vanni, outlining advanced work. Ills. 3500 w. Industria—June 22, 1913. No. 43589 D.

On a Dynamo for Maintaining Electrical Vibrations of High Frequency, with Some Notes on the Transmission of Waves in Wireless Telegraphy. Sir Oliver Lodge. Deals with Goldschmidt's

Radiotelegraphy

COMMUNICATION

Submarine Telegraphy

alternator, the advantages of long wavelength, and the causes of ionization in the air. 3000 w. Elect'n, Lond-Aug. 15, 1913. No. 44712 A.

The Imperial Wireless Chain Debate. Reports the debate on the approval of 15000 Marconi agreement. w. Elect'n, Lond-Aug. 15, 1913. No.

44713 Å.

The System "A Onde Unique" (?) of The Société Française Radio-Electrique. G. W. O. Howe. A system, involving an intermediate transforming circuit, in which it is claimed that a single wave is emitted with the closest couplings. Shows that such cannot be the case. 1500 w. Elect'n, Lond-July 25, 1913. 44167 A.

The New Marconi Agreement. Gives the "Treasury Minute" of July 30th, almost in full, with summary of the principal document. 11500 w. Elect'n, Lond —Aug. 8, 1913. No. 44449 A.

Wireless Telegraphy. E. C. Newton. Deals with the development of commercial Ills. Discussion. wireless telegraphy. Jour Cleveland Engng Soc-4000 w.

Sept., 1913. No. 45430 D.
Present Practice in Radio-telegraphy. M. Kintner. A brief statement or radio-telegraphy as practiced at present. Ills. 5000 w. Elec Jour-Sept., 1913.

No. 45098.

Wireless and the Weather. A. H. Taylor. Reports investigations of absorption over land areas made at the Univ. of Dakota, which is 1,200 miles from each coast. 1500 w. Elec Wld—Aug. 30, 1913. No. 44879.

Practical Notes on Radio-telegraphic Transmission (Note pratiche circa i trasmettitori radiotelegrafici). G. Pession. Review of the mathematical theory and notes on construction. 8000 w. Rivista (Supplement) — July-Aug., Marittima 1913. No. 45360 E & F.

Atmospheric Refraction in Wireless Telegraphy. W. H. Eccles. Read before the British Assn. Gives an explanation of the refraction of electric waves round Elect'n, Londthe earth. 2000 w.

Sept. 19, 1913. No. 45558 A.

The Nature of the Electro-magnetic Waves Employed in Radio-telegraphy and the Mode of Their Propagation. G. W. O. Howe. Read before the British Assn. A mathematical study. 3500 w. Elect'n, Lond—Sept. 19, 1913. No. 45557 A. Rulings for Public Wireless Service in

Germany (Die Regelung des öffentliche Funkentelegraphen-verkehrs in Deutschland). H. Thurn. A review of the laws relating to international service on ships and costal stations. 3500 w. Schiffbau Aug. 27, 1913. No. 46048 D.

Recent Devices for the Transmission of Energy through Space without Connecting Wires (Neuere Einrichtungen zur Kraftübertragung in die Ferne ohne forthaufenden Leitungsdraht). W. Wolff. Describes the experiments by Wirth at Nuremberg on the control of torpedo boats, explosion of submarine mines, etc., by wireless. Ills. Serial, 1st part. 2000 w. Schiffbau—Sept. 10, 1913. No. 46050 D.

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Eligineering.

Signalling

Circuits for Elevator Signalling. Department stores in the present number. Ills. 1500 w. Elec Box & W. Elec Rev & W Elect'n-Serial, 1st part. No Jan. 18, 1913. 39226.

Some Methods of Magnifying Feeble Signalling Currents. S. G. Brown. Discourse at the Exhibition of Apparatus of the Phys. Soc. Describes instruments designed for cable work, but applicable in other fields. Line drawings, 2200 w. Elect'n, Lond — Feb. 21, 1913. No. 40305 A.

See also Signal Systems, under MINING AND METALLURGY, Mining.

Signals

Burglar-Alarm Circuits. George Reed. Explains two systems of wiring for this especial service. 1500 w. Elec Rev & W Electri—Feb. 15, 1913. No. 39881.

Submarine Cables

The Loading of Submarine Telephone ables. J. G. Hill. A comparison between coil-loaded and continuously-loaded cables. 1500 w. Elec Rev, Lond—Nov. 29, 1912. Serial. 1st part. No. 38111 A. Graphs in a Cable-Ship Drum-Room:

Notes for Junior Assistants. Raymond Barker. Discusse Edward Discusses graphic methods applicable to drum-room routine work. 2000 w. Elec Rev, Lond—Jan. 17, 1913. Serial, 1st part. No. 39458 A.

The Submarine Telegraph Cable from Italy to Lybia (I cari telegrafici sottomarini dall' Italia alla Libia). Emanuele Jona. An account of the work of laying this cable across the Mediterranean. Ills. 3400 w. Industria—Feb. 9, 1913. No. 40612 D.

Sine-Wave Transmission in the Submarine Telegraph Cable. H. W. Malcolm. A mathematical study. 2000 w. Elect'n, Lond—Oct. 10, 1913. Serial, 1st part. No. 45971 A.

Submarine Telegraphy.

The Sounder in Submarine Telegraphy. Edward Raymond-Barker. Discusses the

invention of Mr. John Gott, which enables the ordinary Morse to be worked on

long submarine cables. 2200 w. Elec Rev, Lond—Feb. 28, 1913. No. 40463 A. The Methods of Submarine Cable Sig-nalling. H. W. Malcolm. Considers the methods of the siphon recorder code, ordinary Morse code, the Gott form of Morse, and the Picard form of Morse. 2000 w. Elect'n, Lond—April 11, 1913. Serial. 1st part. No. 41379 A.

Telegraph Lines

The Construction of Telegraph Lines Between Surabaya and Wonokromo (De ombouw van de telegrafgeleiding tusschen Soerbaja en Wonokromo). J. Aanstoots. Details of the type of construction adopted for this tropical region in the Dutch Indies. Ills. 2700 w. De Ingenieur-May 24, 1913. No. 43052 D.

Telegraphy

The Siemens & Halske Electric Long-Distance Printing Machine (Der elek-**Extraction of device actuated by typewriter keys and transmitting the letters struck. Ills. Serial, 1st part. 4000 w. Elek u Masch—Jan. 12, 1913. No. 40057 D.

The Morse Telegraph. George C. Maynard. Address delivered at Washington, D. C., at the dedication of a bronze memorial tablet on the site of the first commercial telegraph office in the world. 2500 w. Elec Rev & W Elect'n—July 19,

1913. No. 43832. Telephone Cables

The Gulf of Georgia Submarine Telephone Cable. E. P. La Belle and L. P. Crim. Describes the cable recently laid between Point Grey and Nanaimo, on Vancouver Island. Ills. 4000 w. Pro Am Inst of Elec Engrs—Sept., 1913. No. 45519 F.

Telephony

Depreciation and Replacement of Growing Telephone Plants. Burke Smith. Aims to show the effect of age, growth, and other phases of depreciation, applying especially to telephone properties.

Discussion. 9500 w. Jour W Soc of
Engrs—Oct., 1912. No. 37742 D.

A Method of Improving the Sensitive-

ness of the Telephone Receiver as a Detector in Alternating Current Null Measurements. Phillips Thomas. Describes a modification of the telephone detector which does away with the limitations ordinarily encountered in using the receiver as a detector. 1200 w. Jour Fr Inst—Dec., 1912. No. 38399 D.

Battery-Ringing Telephones. Diagrams and description of a system adapted espe-

cially for small installations. 1500 w. Sci Am Sup—Jan. 11, 1913. No. 39108.

Pioneers in Telephone Engineering. Thomas A. Watson. An account of experiences with the first telephones. Ills. 2200 w. Sci Am Sup—April 5, 1913. No. 41057.

Trunk Telephone Communication Transmission Schemes and the Design of Circuits. A. B. Hart and W. J. Hilyer. Abstract of paper read before the Inst. of P. O. Engrs. Discusses standards of reference for speech and transmission, best distribution of copper in line circuits, etc. 4500 w. Elect'n, Lond—April 11, 1913. No. 41377 A.

The Telephonic Development of the British Isles Considered in Relation to the Population. W. H. Gunston. From the Post-Office Elec Engrs' Jour. Interesting statistics. 1000 w. Elect'n, Lond—April 25, 1913. No. 41917 A.

A Note on High-Frequency Wave Filters. G. M. B. Shepherd. Considers the theory of wave filters and gives constructional particulars based on practical experience of such a filter for telephonic work. 1500 w. Elect'n, Lond—June 13, 1913. No. 43132 A.

Condenser Telephones. Karl Ort and Josef Rieger. Abstract from Archiv für Elektro-technik. An account of improvements and interesting experiments. Ills. 2000 w. Elect'n, Lond—June 6,

1913. No. 42880 A.

Practical Application of Telephone Transmission Calculations. A. J. Aldridge. Considers the theory of telephonic transmission from the non-mathematical point of view, describing apparatus for simplifying calculations and showing its applications. Ills. 7800 w. Inst of Elec Engrs—May 21, 1913. No. 42877 N.
Test of an Artificial Aerial Telephone

Line at a Frequency of 750 Cycles per Second. A. E. Kennelly and F. W. Lieberknecht. Describes an artificial line and a series of tests upon it. Ills. 3500 w. Pro Am Inst of Elec Engrs—June, 1012

1913. No. 43207 F.

Application of Mechanical Devices to Application of Mechanical Devices to the Assistance of Manual Operating in Telephone Exchanges. W. Slingo. Illustrates and describes experimental equipment installed for the British Post-Office. 3000 w. Inst of Elec Engrs—May 21, 1913. No. 42878 N.

Automatic Methods in Long Distance Telephone Operation. H. M. Friendly and A. E. Burns. Describes equipment for improving service. Ills. 8500 w.

for improving service. Ills. 8500 w. Pro Am Inst of Elec Engrs—June, 1913.

The Betulander Automatic Telephone

Telephony

COMMUNICATION

Wireless Towers

System. Brief illustrated description. 1800 w. Elec Rev, Lond—May 16, 1913. No. 42529 A.

The Inclusion of Dalmatia in the Austrian Telephone System (Die Einbeziehung Dalmatiens in das österreichische Telephonnetz). E. F. Petritsch. Necessity and difficulty attending the final con-struction of a submarine telephone cable to the province of Dalmatia. Serial, 1st part. 3200 w. Elek u Masch—July 6, 1913. No. 44686 D.

The Telephone Stations of the World at the Beginning of 1912. W. H. Gunston. From the P. O. Elec. Engrs. Jour. Statistics relating to telephone develop-ment. 2500 w. Elect'n, Lond—Sept. 5, No. 45144 A. 1913.

Traffic Distribution in Manual Tele-phone Exchanges. J. Baumann. Describes the selector-switch system of automatic traffic distribution and its applicability to any C. B. Telephone exchange. Ills. 4000 w. Elect'n, Lond—Aug. 29, 1913. No. 45031 A.

Some Telephone Traffic Problems and Their Solutions. Paul Bunce. Read before the N. Dak. Tel. Assn. Suggestions for securing efficiency in operating. 2000 w. Telephony—Oct. 18, 1913. No. 45952. Modernizing the Telephone Feeder and

Distribution Plant. Charles W. McKay. Discusses facilities for maintaining telephone service in cities of about 25000 population. 1500 w. Telephony—Oct. 18, 1913. No. 45950.

See also Railophone and Telephone Despatching, under RAILWAY ENGINEERING, Conducting Transportation.

Telephotography

Sending Photographs Over a Telephone ire. Jacques Boyer. Illustrated description of the improved Bélin apparatus. 1200 w. Sci Am—Dec. 21, 1912. No. 38278.

Time Signals

Recording Time Signals from the Eif fel Tower to 1/100 Seconds (L'inscription des signaux horaires de la tour Eiffel au 1/100 seconde près). Albert Turpain. A review of the work and instruments used in accomplishing this phase of radiotelegraphy. Oscillograms and Ills. 5800 w. Rev Gen des Sciences—May 15, 1913. No. 42197 D.

Hertzian Time Signals (Les Signaux Hertziens de l'Heure). M. Turpain. The graphical registering of time signals in the fraction of a second from the sending station by the aid of extra-sensitive productions. relays. Ills. 5600 w. Bull Soc Int d'-Electriciens—April, 1913. No. 42187 F.

Application of Wireless Telegraphy to Time Signals. Commandant Ferrie. Abstract of a paper read in Paris, May 24, 1913. Describes the manner of sending the signals and explains the advantages. 2500 w. Engng—June 6, 1913. No. 2500 w. 42887 A.

The Recording of Radiotelegrams and Its Application to Precise Geodesy (L'enregistrement des radiotélégrammes et son application en géodésie de précision). Albert Turpain. Explains the use of time signals for the determination of longitude. Ills. 2300 w. La Nature—May 23, 1913. No. 43055 D.

Towers

Wireless Telegraph Transmission Tow-ers. James Stedman. Illustrates and describes the design and erection of the lofty sectional steel poles for a globe circuit of 3000-mile transmission stations. 800 w. Ir Age—Oct. 23, 1913. No. 46123 C.

Wireless Stations

The New Wireless Telegraph Station at Fort Myer, Virginia. Davis H. Tuck and Millard B. Hodgson. Illustrates and describes this station and outlines the work for which it was designed and equipped. 2000 w. Elec Rev. Lond—Dec. 20, 1912. No. 38862 A.

Wireless-Telegraph Station at Fort Myer, Va. D. H. Tuck and M. B. Hodg-son. Illustrates and describes the structures and the work it is intended to ac-1500 w. Elec Wld-Jan. 18, complish. 1913. No. 39230.

Wireless Telephony

Wireless Telephone for Pit Use. Dobbelstein. Discusses some of the problems of such installations and the ad-

rems of such installations and the automatages. Ills. 1500 w. Ir & Coal Trds Rev—June 6, 1913. No. 42900 A.

Wireless Telephony (La téléphonie sans fil). Prof. Vanni. A description of the apparatus designed by the author, its operation, and account of its success its communication between Porme and in communicating between Rome and Tripoli. Ills. 5000 w. La Nature—May 17, 1913. No. 43054 D.

Some Novel Experiences in Wireless Telephony (Sur quelques expériences nouvelles de téléphonie sans fil). J. Vanni. A review of experiments conducted by the author and others in this field, and their successful results. Ills. 4900 w. Bull Soc Int d Électriciens— May, 1913. No. 43566 F. See also Radiotelegraphy, under Com-

MUNICATION.

Wireless Towers

Erecting Tall Wireless Towers at Arlington. Illustrated description of light steel towers 450 and 600 feet high erected by specially guyed derricks on wooden falsework with auxiliary steel towers.

Wireless Transformers

COMMUNICATION -

Grounding

2600 w. Eng Rec—Dec. 7, 1912. No. 38080.

Wireless Transformers

The Construction of a One-Kilowatt

Closed Core Wireless Transformer. lustrated description of the construction, explaining the advantages. 2500 w. Sci Am-Oct. 11, 1913. No. 45757.

DISTRIBUTION

Alternating Current
The Distribution of Alternating Currents in Infinitely Expanded Plates
(Ueber die Verteilung des Wechselstromes in unendlich ausgedehnten Platten). W. O. Schumann. Mathematical discussion. Serial, 1st part. 4000 w. Elek u Masch—July 27, 1913. 44692 D.

Circuit Breakers

Rating of Oil Circuit Breakers with Reference to Rupturing Capacity. George A. Burnham. Short paper advocat-ing a universal method of rating oil circuit breakers, which will be devoid of as many variables as possible. 500 w. Pro Am Inst of Elec Engrs—Feb., 1913. No. 40185 F.

Developments in Circuit Breakers and Switchboards (Die Entwicklung der Ausschalter und der Schaltanlagen). Friedrich Patzelt. Brief sketch of improvements adopted from the original forms. Ills. 2000 w. Elek u Masch (Special)— March, 1913. No. 41486 D. Receleration Developments in Oil Circuit

Breakers. J. H. Mahoney. Discusses general points of design, the functions, operating mechanism, &c., illustrating and describing types. 3000 w. Jour-Aug., 1913. No. 44593.

Notes on Oil Circuit Breakers for Large Powers and High Potentials. K. C. Randall. A brief outline of some of the 1mportant developments in oil circuit breakers within the last two or three years for the largest powers and highest potentials. Ills. 1000 w. Pro Am Inst of Elec Engrs

Oct, 1913. No. 46337 F.

Telephonic Circuits Over Long Spans Compared with Electric Power Transmission Lines (Les Circuits téléphoniques à longue portée comparés aux Lignes électriques de Transport de force). Paul Drumaux. A study of the oscillatory phenomena of industrial lines and their relation to telephone lines. Ills. 9600 w. Soc Belge d'Electriciens—June, 1913. No. 45305 E

A Model for Demonstrating Some of the Effects Obtained in Coupled Oscillating Electrical Circuits. E. W. Marchant. Illustrated description. 1200 w. Elect'n, Lond—Sept. 26, 1913. No. 45730 A.

City Lines

Underground Distribution for Small

Cities. S. Bingham Hood. Outlines a type of underground distribution which has been successfully installed in Toronto. Ills. 5000 w. Can Elec Assn-June, 1913. No. 44812 N.

Conduits

Notes on Underground Conduit Construction. Guy F. Speer. Illustrates and describes methods used in New Jersey, which reflect modern practice, especially in the laying of fiber conduit. 1800 w. Elec Wld—Jan. 4, 1913. No. 38835.

The Construction of Underground

Pipe Lines for Electric Cables. Francis H. Davies. Helpful suggestions for wiring. 2500 w. Elec Rev Feb. 15, 1913. No. 39880. Elec Rev & W Elect'n-

Installation of Rigid-Conduit Work in Buildings of Concrete Construction. G. N. McCarthy. Illustrated directions for the work. 3000 w. Elec. Rev. & W Elect'n—Oct. 11, 1913. Serial, 1st part. No. 45795.

Converters

Modern Converting Machinery. Illustrates and describes forms of converting machinery, showing how it should be connected up and worked to the best advantage. 3500 w. Engr, Lond—June 18, 1913. Serial, 1st part. No. 43148 A.

Currents Current Distribution Over and Beyond n Junction Points (Stromverlegung über und nach n Knotensjunkten). H. Frohman. Mathematical discussion. Dia-

grams. Serial. 1st part. 2800 w. Elek u Masch—March 23, 1913. No. 41478 D. Field Distribution

Notes on Electric Field Distribution. W. S. Franklin. Diagrams and discussion of the production of any desired field distribution. 2500 w. Jour Fr Inst— July, 1913. No. 44030 D.

Electric Fuse Testing. A. A. Somer-Gives results of an investigation of the advantages and disadvantages of the electric fuse. 1500 w. Elec Wld— Jan. 18, 1913. No. 39229.

Grounding Grounded Y versus Isolated Delta from the Point of View of the Systems in the Southwest. Chester W. Rice and S. Southwest. Thomson. Shows the advantages, from the standpoint of continuity of service, of the dead grounded neutral. 2500 w. Gen Elec Rev—Oct, 1913. No. 45583 C.

Mine Wiring

DISTRIBUTION

Switching

Mine Wiring

Electric Cables in Mines. G. W. T. Anderson. Read before the Manchester Geol. & Min. Soc. Discusses types of cable and their relative efficiency, installing, types of shaft suspension, etc. Ills. 3000 w. Col Guard—Feb. 14, 1913. Serial, 1st part. No. 40127 A.

Oil Switches

Some Notes on Oil Switch Arrangements. Emil Bern. Reviews the evolution of the control and layout of oil switches. 1000 w. Gen Elec Rev—Feb., 1913. No. 39616 C.

The Testing of an Oil Switch. M. Vogelsang. Abstract of an article in Electrotechnische Zeit. Describes tests

that were made in a power station in Norway with conclusions. Ills. 1500 w. Elect'n, Lond—June 27, 1913. No. 43625 A.

Parallel Operation
Some Factors in Parallel Operation.
A. R. Everest. Notes aiming to show how to avoid "hunting." 3000 w. Inst of Elec Engrs-Feb., 1913. No. 40099 N. Power Distribution

Transmission of Electric Power. L. R. Pomeroy. The flow of water from pumps is used to explain the various systems of electric distribution. Ills. 3000 w. Am Engr—April, 1913. No. 41089 C.

Regulators

Developments in Regulator and Starting Appliances, Hoists, Cranes and Lifting Magnets (Die Entwicklung der Regulier und Anlassapparate, Aufzüge, Krane, Hebemagnete). F. Natalis. Lines of improvement in recent years, and their origins. 2400 w. Elek u Masch (Special)— March, 1913. No. 41487 D. The Regulator Problem in Electro-

Technology (Das Regulierproblem in der Elektrotechnik). A. Schweiger. A summary of the early attempts to solve the problem, and the work done by the vari-

ous investigators. 4400 w. Elek u Masch (Special)—March, 1913. No. 41488 D. Automatic Voltage Regulation. W. J. Belsey. Read before the Assn. of Univ. Elec. Engrs. Considers briefly several types of regulators. losses in generator fields, line losses, effect of voltage variation on lamps, etc. 3000 w. Ir & Coal Trde Rev—May 2, 1913. No. 42252 A. The Tirrell Regulator. John A. Randolph. Diagrams and description of ar-

rangement on alternating-current switchboard and with direct-current generator. 2000 w. Power-Oct. 7, 1913. No. 45701.

Practical Installation of Relays on Alternating-Current Circuits. C. E. Freeman. Suggestions as to their installation and adjustment. 3000 w. Elec Wld -Nov. 2. 1912. No. 87281.

Switchboard Relays and Their Application. D. Basch. First of a series of articles discussing in detail the types, construction and application of relays. Ills. 4000 w. Gen Elec Rev—April, 1913. Serial. 1st part. No. 40990 C.

Switchboards

Switchboards for Alternating-Current Power Stations-General. C. H. Sanderson. A. comparative discussion of the three classes suitable for A. C. stations and the factors influencing choice. 4000 w. Elec Jour-Jan., 1913. 39442.

Some Notes on Switchboard Design. Emil Bern. Reviews principally the requirements which have caused the development of the bench type of board, describing the construction and layout of types. Ills. 1500 w. Gen Elec Rev—Oct., 1913. No. 45587 C.

Switch Design

Recent Developments in High-Voltage Oil Break Switch Design. E. H. Jacobs. Describes changes and improvements introduced. Ills. 2500 w. Gen Elec Rev-June, 1913. No. 42588 C.

Switches

A 6000-Ampere, 750-Volt, Three-Phase Oil Switch. Illustrated description of switchgear developed by Messrs. Ferranti, Ltd. 2000 w. Elect'n, Lond—Nov. 15, 1912. No. 37809 A.

Arcing Phenomena on High-Tension Switches. W. Hoepp. Abstract of an article in Elektrotechnische Zeit. Considers particularly direct-current switches, and deduces general principles. 1800 w. Elect'n, Lond - April 11, 1913.

Main Switchgear and the Continuity of Supply. B. Mittell. Deals with the importance of constructing main switchgear so that the chance of failure of supply is reduced to a minimum. 4500 w. Elect'n, Lond—April 5, 1913. No. 41225 A.

Types of Disconnecting Switches and Their Application. H. G. French. Gives descriptions of disconnecting switches suitable for use on circuits up to 150000 volts. Ills. 1200 w. Gen Elec Rev—July, 1913. No. 43331 C.

Switching

Switching Operations on Low and High-Tension Systems, with Special Reference to the Safest Methods. W. W. Lewis. Summary of results of investigations of the phenomena occurring when high or low-voltage switching is performed with various interconnections. Gives also recommendations as to the safest methods.

DYNAMOS AND MOTORS

A. C. Motors

Ills. 1700 w. Gen Elec Rev-Oct. 1913. No. 45585 C.

Three-Wire

Wiring

The Question of Voltage Distribution in Three-Wire Continuous-Current Networks (Zur Frage der Spannungsteilung Dreileiter-Gleichstromnetzen). A study of the theories in-Lauteren. volved. Diagrams. 1800 w. Elel Masch—July 20, 1913. No. 44690 D. Elek u

Three Wire System

Three Wire System with Rotary Bal-ancer. A. M. Bennett. Discusses especially the rotary balancer and its action. 2500 w. Power - April 8, 1913. No. 41127.

Wiring

Modern Methods of Electric Wiring. Frank Broadbent. Read before the Assn. Explains systems of Engrs.-in-Charge. and details of methods used. 4500 w. Elec Rev & W Elec'n—Jan. 11, 1913. No. 88978.

Electrical Equipment of the Jersey City Post-Office. Harold A. Alb. scribes the method of wiring, the materials used, and the fixtures installed. Ills. 1800 w. Elec Rev & W Elect'n—Feb. 22, 1918. No. 39992.

Residence Wiring. Illustrated description of an installation in a brick building having concrete floors. 2500 w. Elec Rev & W Elec'n—April 26, 1913. No.

41655.

The Protection of House wiring from High Voltages Caused by the Operation of Nearby Wireless Telegraph Outfits. G. F. Gray. Reports a quantitative study of the disturbances and their removal. Describes a system of protection, using the aluminum cell arrester and the new

vacuum tube arrester. 3000 w. Gen Elec Rev—April, 1913. No. 40989 C. Developments in Electrical Wiring Cal-culations (Die Entwicklung elektrischer Leitungsrechnungen). Josef Herzog. Progress made in wiring, network, feeder and distribution calculations since 1883.

Ills. 4800 w. Elek u Masch (Special)— March, 1913. No. 41490 D. A Modern Installation of Hospital Wiring. Harold L. Alt. Illustrated description of an interesting installation in the Hospital for the Ruptured and Crippled, in New York City. 1000 w. Elec Rev & W Elect'n-May 24, 1913. No. 42388.

An Interesting Installation of Wiring in an Office Building. Illustrates and describes methods of construction in a

modern type of fireproof building. 2500 w. Elec Rev & W Elec'n—May 17, 1913.

Common-Sense Methods of Making Wiring Calculations. N. V. Dunne. Gives examples and solutions. Ills. 4000 w. Elec Rev & W Elect'n-June 14, 1913. No. 42845.

The Electrical Work in a Large Store and Office Building. Illustrated notes on wiring and equipment, details of construction, &c. 3000 w. Elec Rev & W Elect'n—June 7, 1913. No. 42727.

The Electrical Work in the New Me-

dinah Temple. Illustrated notes on the equipment and wiring. 2500 w. Rev & W Elect'n—May 31, 1913.

Some Practical Features of Safe Moulding Wiring. E. B. Munsey. Calls attention to certain features in connection with this work, essential for safety. Ills.

2200 w. Elec Engng-July, 1913. No. 43606.

Wiring Buildings of Steel Construction. Ernest G. Bradshaw. Discusses methods which seem to be standard in some modern plants and which give an excellent installation. Ills. 1200 w. Mech Wld-July 18, 1913. Serial. 1st part. No. 43958 A.

Wiring of the Bankers' Trust Building: Illustrates and describes features of the wiring installation and riser-shaft construction in a 31-story office building. 1800 w. Elec Wld—June 28, 1913. No. 43309.

Electric Wiring and Illumination of the Continental and Commercial Bank Building, Chicago. Illustrated detailed description. 5000 w. Elec Wld—July 26, 1913. No. 43928.

The Development of Rubber-Covered Wire Specifications for House Wiring. Hugh T. Wreaks. Shows the develop-ment of National Electrical Code specifications from 1901 to date. 2500 w.

Elec Wld—Aug. 23, 1913. No. 44564. Conduit Wiring. O. N. Casey. Illustrates and describes electrical conduit fittings and methods of supporting cables. 1500 w. Prac Engr-Sept. 1, 1913. No. 44863.

Battery-Room Wiring of Electric-Vehicle Factory. T. W. Poppe. Illustrated description of work in a factory at Long Island City. 2000 w. Elec Wld—Oct. 25, 1913. No. 46204.

See also same heading, under STREET AND ELECTRIC RAILWAYS.

DYNAMOS AND MOTORS

A. C. Motors

Alternating Current Motors for Mines and Mills. S. R. Stone. Explains con-

siderations that should guide in the selection of motors best suited to the purpose intended for use in mines and mills.

A. C. Motors.

DYNAMOS AND MOTORS

Alternators

Ills. 4500 w. Min & Engng Wld—Nov. 9, 1912. No. 37344.
Mine Ventilators Driven by Three-

Mine Ventilators Driven by Three-Phase Motors with Regular Periods (Antrieb von Grubenventilatoren durch Drehstrommotoren mit regelbarer Umlaufzahl). Herr Sauvage. Describes new Brown, Boveri-Scherbius plant installed in prominent Austrian mines. Ills. 2400 w. Glückauf—Oct. 12, 1912. No. 37410 D.

A. E. G. Three-Phase Motors for Direct Coupling with Hydraulic Turbines (A. E. G.-Drehstrommaschinen für direkte Kuppelung mit Wasserturbinen). G. Lewinnek. Detailed description. Ills. 1200 w. Elek Kraft u Bahnen—Oct. 14, 1912. No. 37467 D.

Useful Braking of Polyphase Commutator Motors with Series Characteristics (Ueber die Nutzbremsung der Mehrphasen-Kommutatormotoren mit Seriencharakteristik). F. Niethammer and E. Siegel. Continuation of a series of articles on the mathematics involved in motorbraking. Ills. 2800 w. Elek u Masch—Sept. 29, 1912. No. 37469 D.

Notes on the Parallel Running of Alternators. L. Fokes. Read before the S. Wales Br. of the Assn. of Min. Elec. Engrs. The discussion is confined to three-phase machines, considering the connections, methods of synchronizing, effects of excitation and of armature reaction, etc. 2500 w. Ir & Coal Trds Rev—Dec. 6, 1912. No. 38256 A.

Large Synchronous Motors for Compressor Service. Girard B. Rosenblatt. General discussion of air compressors for the pressure used in mining work, with illustrated description of the plant of the Anaconda Copper Mining Co., at Butte, Mon. 3000 w. Min & Sci Pr—Dec. 7, 1912. No. 38165.

Alternating - Current Motors for the Economic Operation of Mine Fans. F. B. Crosby. Considers mine fan applications under the heads of those requiring constant speed, and those requiring adjustable speed drive. 3000 w. Pro Am Inst of Elec Engrs — April, 1913. No. 41675 F.

The Kapp Factor for Alternating Currents of General Curve Form (Der Kappsche Faktor für Wechselströme allgemeiner Kurvenform). Leopold Klein. Theoretical discussion based on the statements of Dr. Karl Pichelmayer, in his Handbuche der Elektrotechnik. 3200 w. Elek u Masch — March 9, 1913. No. 41477 D.

See also Railway Motors, under Dynamos and Motors. Air-Gaps

Air-Gaps in Moving-Coil Instruments. Charles C. Garrard. Considers the effect of various arrangements of the air-gap on the efficiency of the instrument. 1500 W. Elec Rev, Lond—June 27, 1913. No. 43621 A.

Alternators

Notes on the Design of Steam Turbine-Driven Alternators. H. G. Reist. Discusses recent tendencies in the design of high-speed alternators. Ills. 1200 w. Gen Elec Rev—Feb., 1913. No. 39611 C.

Gen Elec Rev.—Feb., 1913. No. 39611 C.
Regulation of Definite Pole Alternators. Soren H. Mortensen. Suggests a method called the "triangle method." 900 w. Pro Am Inst of Elec Engrs—Feb., 1913. No. 40187 F.

The Experimental Determination of the Regulation of Alternators. A. B. Field. Advocates basing regulation determinations upon the power factor zero load saturation, and the no-load saturation. 1500 w. Pro Am Inst of Elec Engrs—Feb., 1913. No. 40208 F.

Parallel Operation of Alternators. C. A. Tupper. Enumerates conditions that must be complied with before two alternators may be placed at work in parallel upon a common load. 1500 w. Coal Age—April 26, 1913. No. 41547.

Alternator Testing. F. S. Barton. Detailed description of tests made. 4000 w. Power—April 22, 1913. No. 41566.

Power—April 22, 1913. No. 41566.
Air Filtration, Cooling and Ventilating of Electrical Machinery. J. Christie. Notes applying to large steam turbodriven alternators. Ills. Short discussion. 2800 w. Elec Rev, Lond—June 27, 1913. No. 43622 A.

Air Filtration, Cooling and Ventilating of Electrical Machinery. J. Christie. Notes intended to apply to large steam turbo-driven alternators. Ills. Discussion. 3000 w. Elect'n, Lond—June 20, 1913. No. 43376 A.

Proper Installation of Alternators. C. A. Tupper. Enumerates the principal differences in alternators which bear upon the method employed in installation. 2500 w. Coal Age—July 26, 1913. No. 43921.

High Frequency Alternators (Les Alternateurs à haute Fréquence). R. Jouaust. Description of those employed in radiotelegraphy and radiotelephony. Ills. 7200 w. Rev Gen des Sciences—June 30, 1913. No. 43573 D.

On the Goldschmidt Alternator. Thomas R. Lyle. Shows that the theory of the Goldschmidt alternator is a simple case of the more general theory of the alternate-current generator. Math-

Armature Discs

DYNAMOS AND MOTORS

Commutation

ematical. 2500 w. Elect'n, Lond—Sept. 26, 1913. No. 45728 A. No. 45728 A.

Armature Discs

The Manufacture of Armature and Field-Magnet Discs and Improvements in Machines and Tools Used for This Work (Die Fabrikation von Anker-und Feldmagnetblechen und die Entwicklung der dazu geeigneten Maschinen und Werkzeuge). August Bauschlicher. Describes apparatus in present use. Ills. Serial, 1st part. 2500 w. Zeit für Werkzeuge—July 15, 1913. No. 44672 D.

Armatures

Armature Reaction in Lap-Wound Machines. Dr. W. Lulofs. Shows that only in the case of the four-pole machine is the counterbalancing true. Elect'n, Lond—Nov. 29, 1912. 1st part. No. 38114 A. 1800 w.

Some Mechanical Points in Armature Construction. R. Livingstone. Notes relating to the estimation of certain values of importance in the mechanical design of generators and motors. 2500 w. Electr'n, Lond—Jan. 24, 1913. Serial, 1st part. No. 39776 A.

The Deflection of Armature Shafts. H. Edington. Mathematical discussion of the problem, describing a convenient method of following the curves. 3500 w. Engng—Jan. 31, 1913. No. 39800 A. See also Windings, under *Dynamos*

and Motors

Brushes

Carbon Brushes for Direct Current Machines. E. H. Martindale. Shows that the brush holder and brush holder rigging are responsible for more trouble than any other one part of the machine. 1800 w. Elec Trac-June, 1913. Ills. No. 42850.

Some Experiments on Brush Contact Resistance. Alfred Hay, M. H. Bhatt, and J. M. Parikh. An account of experiments carried out at the Indian Inst. of Science, Bangalore. 3000 w. Elect'n, Lond—July 4, 1913. No. 43705 A.

Brush Losses

Brush Friction and Contact Losses. H. F. T. Erben and A. H. Freeman. Calls attention to the insufficiency of the present Standardization Rules of the Institute on this subject, and describes a more accurate method. 600 w. Pro Am Inst of Elec Engrs—Feb., 1913. No. 40193 F.

Methods of Determining Brush Losses Due to Contact and Friction. H. R. Edgecomb and W. A. Dick. Indicates the avenues along which investigations should proceed and the nature of the results which will be useful to designing engineers. Ills. 3300 w. Pro Am Inst of Elec Engrs—Feb., 1913. No. 40198 F.

Commutation and Brush Loss. Wilson. Discusses the brush loss in d. c. machines and calls attention to the relation between the commutating characteristics of the machines and this loss. 1600 w. Pro Am Inst of Elec Engrs—Feb., 1913. No. 40212 F.

Coils

Notes on Internal Heating of Stator Coils. R. B. Williamson. Deals with a. c. generators, particularly those with long cores in which little heat can be conducted from the center of the machine to the ends. 2500 w. Pro Am Inst of Elec Engrs—Feb., 1913. No. 40197 F. Studies on Choking Coils (Studien über Drosselspulen) R. Edler. The deriva-

tion of formulæ for the calculation of iron-core choking coils. Ills. Serial. 1st part. 2800 w. Elek u Masch—Sept. 21, 1913. No. 46081 D.

Commutation

The Physical Theory of Commutation. G. W. Worrall. Discusses the self-induction of the short-circuited coil, the magnetic condition of the commutating zone, and some various other commutation theories. 5500 w. Elect'n, Lond—Jan. 17, 1913. No. 39461 A.

Experimental and Theoretical Research on Commutation in Continuous-Current Dynamos (Recherches expérimentales et théoriques sur la commutation dans les dynamos a courant continu). M. Mauduit. A comprehensive review of original work in corroboration and disagreement with theories expressed by others. 21000 w. Bull Soc Int d'Électriciens-Dec., 1912. No. 39080 F.

The Theory of Commutation. Karl Pichelmayer. Abstract trans. from Elek. Zeit. Explains the theory and changes introduced in the formula for calculating the commutation pressure. 2500 Elect'n, Lond — Feb. 28, 1913. No. 40469 A.

General Theory of Commutation in the Dynamo (Théorie générale de la commutation dans la dynamo). M. Mauduit. Standards of good commutation by the neutral line theory. Ill. 9800 w. Bull Soc Int d'Electriciens—Feb., 1913. No.

Commutating-Pole Saturation in D-C. Machines. Harold E. Stokes. Discusses the importance of obtaining the characteristic curve of the commutating-pole useful flux, especially in machines designed to withstand heavy overloads. 3500 w. Pro Am Inst of Elec Engrs— July, 1913. No. 43345 F.

The Neutral Commutation Zone (Die neutrale Kommutierungszone). C. L. R. F. Menges. Contribution to the theories

Commutators

DYNAMOS AND MOTORS

Control

advanced by Pichelmayer, with original researches. Diagrams. 4000 w. Elek u Masch—June 29, 1913. No. 43544 D. Commutation in the Actual Neutral

Commutation in the Actual Neutral Zone (Kommutierung in der wirklich neutralen Zone). M. Latour. Restatement of the author's opinion, and other theories. Ills. 1800 w. Elek u Masch—July 27, 1913. No. 44691 D.

Commutators

The Care and Operation of Commutators. H. S. Page. Discusses how to secure best results. Ills. 3500 w. Gen Elec Rev—May, 1913. No. 41814 C. Design and Operation of Direct Cur-

Design and Operation of Direct Current Commutating Pole Machines. Frank E. Fisher. Discusses operating principles and brush adjustments. 3500 w. Elec

Engng—Sept., 1913. No. 45022.

Some Examples of the Theory of Alternating Current Commutator Motors (Einige Beispiele zur Theorie der Wechselstrom-Kollektormaschinen). Johann Lissner. Mathematical discussion. Ills. Serial, 1st part. 4400 w. Elek u Masch—July 13, 1913. No. 44689 D.

Reverse Current and Useful Braking in Single-Phase A. C. Commutators with Series Characteristics (Zur Gegenstromund Nutzbremsung von Einphasen-Wechselstromkommutatormotoren mit Seriencharakteristik). Oskar Srnka. Studies the simple series motor, series motor with interposed brake, repulsion motor, etc. Ills. 5000 w. Elek u Masch—Aug. 17, 1913. No. 44695 D.

Condensers

Energy Losses in Some Condensers Used in High-Frequency Circuits. L. W. Austin. Describes experiments to determine the energy losses in different types of sending condensers. 1600 w. Bul Bureau of Stand—March 15, 1913. No. 42934 N.

Contractor

A Single-Phase Alternate-Current Contractor. E. Wilson, J. G. Winn, C. R. Bicknell, and G. R. Anderson. Describes experiments made on a contractor magnet provided with a short-circuited coil. Ills. 1000 w. Elect'n, Lond—March 28, 1913. No. 41131 A.

Control

The Economical Speed Control of Alternating-Current Motors Driving Rolling Mills. F. W. Meyer and Wilfred Sykes. Reviews some of the arrangements used and suggested to meet the required conditions, from a practical operating and commercial standpoint. 9500 w. Pro Am Inst of Elec Engrs—Dec., 1912. No. 38509 F.

Control Apparatus for D. C. Motors. George J. Kirchgasser. Illustrated review of general types and their methods of working. 3000 w. So Elect'n—Dec., 1912. No. 38163.

The Electrical Control of Distant Apparatus. Reviews a recent paper by W. Duddell, A. H. Dykes, and H. W. Handcock, presented to the Inst. of Elec. Engrs. Proposes the employment of relays which will only operate when supplied with electric current of a certain character. 3500 w. Engr, Lond—Feb. 21, 1913. No. 40319 A.

Remote and Automatic Control of Small Alternating-Current Motors. George J. Kirchgasser. Drawing and description of switch arrangements. 900 w. Elec Rev & W Elect'n—March 22, 1918: No. 40773.

Advances in Electrical Remote Control (Fortschritte der elektrischen Fernsteuerung). W. Wolf. Studies on the latest control systems. Ills. Serial. 1st part. 2800 w. Schiffbau—Feb. 26, 1913. No. 40554 D.

Starting and Speed Control of Induction Motors. F. C. Aldous. Features are discussed of the squirrel cage induction motor, and the slip-ring induction motor, considering the type most suitable for different conditions. Abstract of paper and discussion at Manchester. 4000 w. Elect'n, Lond—May 16, 1913. No. 42530 A.

Constant Voltage Transmission. H. B. Dwight. Discusses a method of control of transmission lines by means of synchronous motors—the advantages and disadvantages. 4000 w. Pro Am Inst of Elec Engrs—June, 1913. No. 43211 F.

Protective Control of Motors with Au-

Protective Control of Motors with Automatic Starters (Schützensteuerungen zum selbstättigen Anlassen von Motoren). H. Cruse. Discusses the subject in relation to a. c. and d. c. circuits. Ills. 3300 w. Zeit des Ver deutscher Ing—May 10, 1913. No. 43012 D.

Phase Compensation. Val. A. Fynn. Reviews the nature of phase difference, its effects, how it is produced, and how it can be controlled in A. C. motors, and how the power-factor of a single-phase motor can be controlled. Ills. 6000 w. Elec Wld—July 5, 1913. Serial. 1st part. No. 43474.

Leonard Patent for Electric Control. Diagrams and description of an interesting invention of H. Ward Leonard, and of some of its applications. 1000 w. Elec Wld—Aug. 16, 1913. No. 44414.

Elec Wid—Aug. 16, 1913. No. 44414.
See also Electric Power, under MINING
AND METALLURGY, Iron and Steel, and Control, under STREET AND ELECTRIC RAILWAYS. Also Induction Motors, under Dynamos and Motors.

DYNAMOS AND MOTORS

Heat Transmitters

Converters

Induction Converters (Induktionsum-former). Carl Theodor Buff. Their ap-plication as frequency converters in transforming energy from single fre-quencies to diverging frequencies. Ills. 3300 w. Elek Kraft u Bahnen-March 14, 1913. No. 41500 D.

Rotary Power-Factor Limitations of Converters as Controlled by Tap Coil Heating. J. L. McK. Yardley. Gives curves showing approximately the varia-tions in power-factor which occur, and points out the desirability of adjusting a rotary converter to give 100 per cent power-factor at full load. 1000 w. Elec. Jour-Sept., 1913. No. 45105.

Cooling

Air Filter Plants for Electric Generators. Brief illustrated description of a modern type of air-filter plant. 1000 w. Elec Rev, Lond—Sept. 26, 1913. No. 45727 A.

D. C. Machines

The Change of Energy Loss with Speed in Direct-Current Machines. W. M. Thorn-Deals with measurements for the purpose of examining the dependence of loss on speed. Short discussion. 4200 w. Elect'n, Lond—Dec. 20, 1912. No. 38865 A. Method of Determining Excitation in

Continuous-Current Machines (Méthode de détermination de l'excitation des machines â courant continu). M. Brunswick. A summary of practical methods based on theoretic determinations. Ills. 11200 w. Bull Soc Int des Électriciens— Nov., 1912. No. 39062 F.

See Transformers, under Transmission.

Design.

A Step of Progress in Motor Manufacture. C. W. Starker. Illustrated description of the principal processes in the manufacture of the direct-current motor known as the "SK" type, as built by the Westinghouse Elec. & Mfg. Co., so far as they show the "pressed steel idea" as applied to motor manufactures. 3000 w. Elec Jour-March, 1913. No. 40868.

Vertical Axis Motors and Generators; Their Construction and Application (Verticalaxige Motoren und Generatoren, ihre Construction und Verwendung). Schmidt. Description of several types. Ills. Serial. 1st part. 1600 w. Elek Rund—April 10, 1913. No. 41476 D.

Dynamos

See Rotary Machines, under Machine Elements and Design.

Experimental Plant

An Experimental Alternating Plant. Describes a small alternating plant installed at the Derby Technical College, and the switchboard for controlling the machines. 2500 w. Elect'n, Lond-Sept. 5, 1913. No. 45143 A.

Fan Motors

Fan Motors and Their Control. George Kirchgasser. Illustrated directions. 10000 w. Power-Dec. 31, 1912.

Flashing in Railway Motors. J. A. Reeves. Discusses what is necessary to keep down the flashing. 1000 w. Elec Jour-Oct., 1913. No. 46332.

Generators

Generators for Hydroelectric Plants According to the Siemens-Schuckert Specifications (Generatoren für Wasserkraftanlagen nach Ausführunger der Siemens-Schuckertwerke). Herr Buchta. Illustrated description of recent improved types. Serial. 1st part. 2200 w. Elek Kraft u Bahnen—Oct. 14, 1912. No. 37466 D.

Calculations and Experimental Determination of "Medium Reactance Voltages" (Berechnung und experimentelle Bestimmung der "mittleren Reaktanzspannung"). J. Liska. Studies on the voltages appearing between brush and commutator in D. C. generators. Diagrams. 3200 w. Alek u Masch—Oct. 6, 1912. No. 37472 D.

High Frequency Generator. E. F. W. Alexanderson. Indicates the probable course of development in the wireless art, and illustrates and describes the high-frequency generator for wireless telegraphy and telephony. 3000 w. Sci Am Sup—May 24, 1913. No. 42318. The Condenser Machine. Describes a

new electro-static machine for the direct generation of high-tension continuous current, invented by Dr. H. Wommels-dorf. Ills. 1000 w. Elec Rev, Lond— Aug. 29, 1913. No. 45026 A.

Heat Tests

Short Heat Tests of Electrical Ma-ines. W. R. Cooper. Read before the chines. British Assn. Report of experimental investigations and results. 3800 Elect'n, Lond — Sept. 19, 1913. 45560 A.

Heat Transmission

Laws of Heat Transmission in Electrical Machinery. Irving Langmuir. Presents the fundamental laws of conduction, radiation and convection of heat, and gives experimental data of value. 7000 w. Pro Am Inst of Elec Engrs—Feb., 1913. No. 40195 F.

The Conduction of Heat: With Results of an Investigation of the Thermal Resistivity of Heat-Insulating Materials. C. P. Randolph. Report of investigations carried out on a wide range of substances.

Induction Motors

DYNAMOS AND MOTORS

Inspection

3500 w. Gen Elec Rev-Feb., 1913. No. 39617 C.

Homopolar

Homopolar Dynamos (Les dynamos homopolaires). L. -V. Bournat. A general outline of the principles of unipolar dynamos, with historical sketch, followed by descriptions of modern applications. Ills. 7000 w. Tech Mod—April 1, 1913. No. 41520 D.

Hunting

Hunting. Charles P. Steinmetz. Defines and explains the nature of synchronizing power and force, showing that hunting is not a function of the synchronizing force, but is a true hysteresis effect. 1800 w. Gen Elec Rev-May, 1913. No. 41808 C.

Induction Coils

Shortening of the Period of Excitation in Coils Having High Self-Induction (Verkürzung der Eregungszeit von Spulen mit hoher Selbstinduktion). W. Weiler. A mathematical discussion of six methods for producing this result. Diagrams. 2000 w. Elek u Masch—May 25, 1913. No. 43042 D.

Induction Motors

Discussion on "The Squirrel Cage Induction Generator" (Hobart and Knowlton), "Single Phase Induction Motors" (Branson), and "Motor Starting Currents as Affecting Large Transmission Systems" (Lincoln). Boston, Mass., Systems" (Lincoln). Boston, Mass., June 28, 1912. 3500 w. Pro Am Inst of Elec Engrs—Nov., 1912. No. 37900 F. A New Type of Induction Motor. M. I. Williams-Ellis. Describes the advan-

tages of the "Cascade" single and multi-speed motors. Ills. 8000 w. S African Min Jour-Sept., 1912. (Special.) No.

Notes on the Application of Small Induction Motors. Bernard Lester. siders their correct application, giving a chart for determining relative characteristics of small induction motors and instructions for its use. Ills. 900 w. Elec

Jour-Nov., 1912. No. 37890. The Single-Phase Induction Motor (Der Einphaseninduktionsmotor). ert Moser. Presents the two theories and gives detailed studies. Ills. Serial. 1st 4800 w. Elek u Masch-Oct. 13, part.

1912. No. 37473 D.

Simplified Equations for the Induction Motor. S. M. Robinson. Gives a solution believed to be more simple than methods used. 3000 w. Jour Am Soc of Nav Engrs—Nov., 1912. No. 38298 H. Induction Motor Details. W. Baxter.

Read before the Assn. of Min. Elec. Engrs. A critical examination of some details of the modern induction motor. Ills. 3500 w. Ir & Coal Trds Rev-March 7, 1913. No. 40636 A.

The Cascade Induction Motor. M. I. Williams-Ellis. Abstract of a paper read before the S. African Inst. of Engrs. Reviews early work on cascade construction and gives a description of the cascade in-duction motor of the single and multiplespeed type, and its adaptability to mining and general work. 1700 w. Elect'n, Lond—Feb. 21, 1913. No. 40303 A.

Starting and Speed Control of Induction Motors. F. C. Aldous. Abstract of a paper read before the Manchester local section of the Inst. of Elec. Engrs. Considers only 2 and 3-phase motors of the squirrel cage and slip-ring types. 4500 w. Mech Engr—Feb. 28, 1913. No. 40478 A.

A Self-Starting Single Phase Induction Motor. Charles F. Fraasa, Jr. Illustrated directions for its construction. 2000 w. Sci Am Sup—April 12, 1913. Serial. 1st part. No. 41179.

Tests on Induction Motors Designed L. D. Jones. with Deep Rotor Slots. Gives Results of tests made on deep slot rotors in comparison with rotors having slots of normal depth. 1500 w. C Elec Rev—April, 1913. No. 40987 C. Gen

On Phase-Advancing. Dr. Gisbert-Kapp. Describes the equipment used for this purpose, especially the machine designed by the author for use with induction motors. Ills. 6800 w. Inst of Elec Engrs—April, 1913. No. 41998 N.

The Application and Care of Induction Motors. C. A. Tupper. Remarks on the adaptability of these machines, with suggestions for their selection. 2000 w. Ir Trd Rev—Aug. 21, 1913. No. 44524.

The Induction Motor. F. A. Annett.

Deals with the construction and operation of recent types. Ills. 2500 w. Power—Oct. 14, 1913. Serial. 1st part. No. 45815.

Care of Induction Motors at Mines and Mills. George E. Edwards. Considers the factors influencing the selection and the points needing special attention. Ills. 2500 w. Min & Engng Wld—Oct. 18, 1913. No. 45948.

The New Sandycroft-Hunt Cascade Motors (Neue Kaskaden-Motoren, Bauart Sandycroft-Hunt). A. Ricker. Details of the most recent type. Ills. 2500 w. Zeit des Ver deutscher Ing—Sept. 20, 1913. No. 46042 D.

Inspection

Motor Inspection and Maintenance in Industrial Plants. F. E. Hanchette. Outlines a system of daily inspection showing its value. 1200 w. Eng News -Oct. 16, 1913. No. 45931.

Losses

DYNAMOS AND MOTORS

Railway Motors

Losses

Induction Motor Load Losses. Henry G. Reist and A. E. Averrett. An account of irregularities, methods of measuring losses, results of tests, and conclusions. 1500 w. Pro Am Inst of Elec Engrs—Feb., 1913. No. 40176 F.

Load Losses of Alternating Current Generators. W. J. Foster and Edgar Knowlton. Considers method of determining such losses, which are relatively small and difficult to determine accurately. 2500 w. Pro Am Inst of Elec Engrs— Feb., 1913. No. 40177 F.

Stray Losses in Induction Motors. A. M. Dudley. Shows the "load losses" on induction motors, as described in Sec. 167 of the Standardization Rules, include some losses not actually present when the motor is running under normal conditions. Suggests a method. 2000 w. Pro Am Inst of Elec Engrs—Feb., 1913. No. 40183 F.

Stray Loss in Direct-Current Commutating Machines. H. F. T. Erben and H. S. Page. Presents data showing the magnitude of stray loss occurring in various types of d.-c. machines, and derives approximately correct formulae for determining this loss. 1000 w. Pro Am Inst of Elec Engrs—Feb., 1913. No. 40186 F.

The Determination of Stray Losses from Input-Output Tests. L. T. Robinson. Discusses the precision that can be expected in determining efficiency of certain types of direct current tests. 2500 w. Pro Am Inst of Elec Engrs—Feb., 1913. No. 40215 F.

Notes on Stray Losses in Synchronous Machines. F. K. Brainard. Shows the error of the Institute Rule of taking "load loss" and recommends that the rule be revised. 700 w. Pro Am Inst of Elec Engrs—Feb., 1913. No. 40203 F.

Notes on Induction Motor Losses. R. W. Davis. Notes on data obtained from numerous tests. 700 w. Pro Am Inst of Elec Engrs—Feb., 1913. No. 40192 F.

Determination of Load Loss Correction Factors for Rotating Electric Machines. E. M. Olin and S. L. Henderson. Presents data relating to load losses of certain classes of machines and describes the methods employed to secure the data. Ills. 2500 w. Pro Am Inst of Elec Engrs—Feb., 1913. No. 40202 F.

Machine Foundations.

Sole-Plates and Shoes for Electrical Machine Foundries. F. B. Duggan. Defines the terms and indicates how soleplates and shoes should be used. Ills. 1200 w. Elec Wld—March 15, 1913. No. 40673.

Mill Motors

Discussion on "Direct-Current and Alternating-Current Mill Motors for Auxiliary Drives," Pittsburgh, Pa., April 25, 1912. The paper by Brent Wiley is discussed. 3000 w. Pro Am Inst of Elec Engrs—Nov., 1912. No. 37898 F.

Motor Casings

An Investigation of Explosion-Proof Motors. H. H. Clark. Describes the methods of investigation, and discusses the results of tests. Ills. 44 pp. U S Bureau of Mines—Bul. 46. No. 37882 N. Motor Performance

Performance Similarities of the Direct Current Shunt Motor and the Polyphase Induction Motor. William G. Merowitz. A report of performance tests showing the similarity in the output characteristics of these types. 700 w. Elec Wid—Feb. 1, 1918. No. 39637.

Motors and Motor Applications. A. B. Morrison, Jr. Considers the factors important in fixing the proper size and type of motor, discussing the characteristics of the various types. 3000 w. Power—Feb. 25, 1913. No. 40110.

Commutating Pole Motors. M. Eisig. Read before the Cong. of Int. Tram. &

Commutating Pole Motors. M. Eisig. Read before the Cong. of Int. Tram. & Light Rys. Discusses questions connected with the use of such motors and the advantages thus far established. 3000 w. Tram & Ry Wld—Feb. 6, 1913. No. 40119 B.

Self-Starting Synchronous Motors. Illustrated detailed description of a machine built in Manchester, Eng. 1000 w. Engr, Lond—Jan. 26, 1913. No 39809 A.

Motor Rating

The Rating of Induction Motors. Alexander Gray. If the rating of induction motors is changed from one with an overload guarantee to a single rating with no overload margin, certain changes will be made in the design of the machines. The article points out these changes. 500 w. Elec Wld—June 28, 1913. No. 48310.

Motor Slip
Stroboscopic Method of Measuring Induction Motor Slip. C. W. Kincaid. Describes this method. 900 w. Elec Jour—July, 1913. No. 43809.

Purchasing

Purchase of Electrical Apparatus. Henry D. Jackson. Suggestions are given concerning details of construction and installation of electrical machines and switchboards. 2000 w. Coal Age—Aug. 30, 1913. No. 44869.

Railway Motors

Single-Phase Railway Motors (Die Bahnmotoren für Einphasenstrom). M. Latour. Results of experiments conducted by the Compagnie des Chemins

Rating

de fer du Midi. Ills. 4000 w. Elektrotech u Masch—Dec. 1, 1912. No. 38466 D.

The Development of the Electric Railway Motor. N. W. Storer. Discusses the present trend in design and methods of securing higher efficiency and greater output. 5500 w. Elec Ry Jour—Jan. 4, 1913. No. 38825.

Economies in Railway Motor Maintenance. J. C. Thirlwall. Discusses the importance of regular inspection, the desirability of careful selection and treatment of brushes, overhauling, etc. 4000 w. Gen Elec Review—April, 1913. No. 40986 C.

Single - Phase Anternating - Current Commutator Motors for Railways. M. Latour. Abstract of an article in Elektrotechnik und Maschinenbau. Various types are compared. 2500 w. Elect'n, Lond—March 28, 1913. No. 41130 A. Notes on the Manufacture of Electric

Notes on the Manufacture of Electric Railway Apparatus. R. L. Wilson. Supplementing an article by C. B. Auel. Discusses points calling for consideration in the manufacture of railway apparatus. Ills. 3000 w. Elec Jour—Oct., 1913. No. 46331.

Some Features in Motor Design for Low Floor Cars. F. W. McCloskey. Explains some of the difficulties which have been met in the design of motors for low-floor cars. 2500 w. Elec Jour—Oct., 1913. No. 46329.

Rating.

Generator and Prime Mover Capacities. David B. Rushmore and Eric A. Lof. The importance of the proper adaptation of the capacities is discussed. Considers it desirable to give all generators a maximum constant continuous rating at a specified temperature. 2000 w. Pro Am Inst of Elec Engrs — March, 1913. No. 40441 F.

Reactance

Synchronous and Asynchronous Reactance. J. Rezelman. Describes experiments carried out on a turbo-alternator having a solid cylindrical, steel rotor. Ills. 1200 w. Elect'n, Lond—Sept. 12, 1913. No. 45288 A.

Regulators

Automatic Pressure Regulators. R. L. Morrison. Gives brief descriptions of the Tirrill, Westinghouse, Taylor-Scotson, Thury and Brown-Boveri regulators. Ills. 3000 w. Elect'n, Lond—Aug. 22, 1918. Serial, 1st part. No. 44905 A.

Pressure Regulation. C. Turnbull. A discussion of regulating gear. Diagrams. 2500 w. Elec Rev, Lond—Sept. 5, 1913. No. 45141 A.

Reversing Motors

The Application of Direct Connected

Reversing Motors to Planers, Slotters, and Other Machine Tools. Charles Fair. Shows the large increase in production and saving in power consumption with this form of drive. Ills. 3000 w. Gen Elec Rev—Feb., 1913. No. 39612 C.

Series-Wound

The Series-Wound Electric Motor Working at Constant Pressure and with Constant Current. Sydney F. Walker. Shows the difference in the working of the two machines under the different conditions. 4000 w. Col Guard—May 23, 1913. No. 42754 A.

Shafts

Influence of Magnetic Attraction on the Critical Speed of Dynamo Shafts (Influence de l'attraction magnétique sur la vitesse critique des arbres de dynamos). L. Bergeron. A series of calculations studying the effects of this attraction. Diagrams. 4800 w. Tech Mod—May 1, 1913. No. 42175 D.

Single-Phase

A Single-Phase Motor with Pole-Changing Windings. J. S. Nicholson and B. Parker Haigh. Describes a new type of single-phase commutator motor, discussing the principles involved in the use of pole-changing windings. Ills. 8000 w. Inst of Elec Engrs—Dec. 12, 1912. No. 38843 N.

Single-Phase Railway Motors. Louis Bell. Gives principles of some common types of single-phase traction motors and a comparison of rectifier systems. 3000 w. Elec Ry Jour—June 7, 1913. No. 42719.

Small Motors

Duties Performed by the Small Motor. George J. Kirchgasser. Illustrates and describes a number of applications. 800 w. Elec Wld—Dec. 28, 1912. No. 38695. Sparking

Sparking. E. F. Butler. Remarks on operating faults applying only to machines fitted with carbon brushes. 1000 w. Power—June 10, 1913. No. 42734.

Sparking and Commutation. William C. Thorne. Discusses some difficulties in the operation of d. c. generators and motors, giving suggestions for overcoming them. Ills. 1800 w. Prac Engr, Chicago—Oct. 1 1918. Serial. 1st part. No. 45577.

Speed Control

Speed Control of Fans and Blowers. W. E. Thau. Explains different methods of control giving comparative costs. 700 w. Elec Jour—Nov., 1912. No. 87888.

Starting

Direct-Current Dynamo and Motor Troubles. On difficulties encountered in

DYNAMOS AND MOTORS

Turbo-Converter

starting first-run on machines of this type. Diagrams. 1500 w. Elec Rev & W Elect'n—Oct. 4, 1913. No. 45680.

Switches

150,000-Volt Air-Break Switches for Southern Sierras Transmission System. Illustrated description of switches used by the Southern Sierras Power Co. on the longest direct transmission line, operated at the highest voltage in commercial use. 1500 w. Elec Wld-Aug. 2, 1913. No. 44148.

Synchronizing

Operation of Frequency Changers. N. E. Funk. Aims to analyze the fundamental theory underlying the parallel operation of frequency changers, to consider the running conditions, to apply the the-ory to the operating conditions, and to develop formulæ. 5000 w. Pro Am Inst of Elec Engrs—July, 1913. No. 43342 F.

Synchronous Converters
Recent Designs of Synchronous Con-J. L. Burnham. Points out some of the interesting features in recent designs. Ills. 1500 w. Gen Elec Rev —May, 1913. No. 41811 C.

Synchronous Motors

Self-Synchronizing Machines. Dr. E. Rosenberg. Abstract of paper read before the Inst. of Elec. Engrs. Considers the scope of the synchronous motor, selfstarting synchronous motors, rotary converters, and methods of synchronizing. 3500 w. Elect'n, Lond-April 11, 1913. No. 41378 A.

The Behavior of Synchronous Motors During Starting. F. D. Newbury. Presents experimental data, mainly in the form of oscillograms, showing the effect on field current and armature current of the various conditions of starting. Ills. 4500 w. Pro Am Inst of Elec Engrs-

June, 1913. No. 43206 F.
The Industrial Use of Sychronous Motors by Central Stations. John C. Parker. Points out applications that may be made, and the means of adapting the apparatus to the conditions. Ills. 2000 w. Pro Am Inst of Elec Engrs—June, 1913. No. 43205 F.

The Industrial Use of Synchronous Motors by Central Stations. John C. Parker. Points out applications that may be made of the synchronous motor, and the means of securing cooperative effort between the central station and customers. Ills. 2000 w. Sci Am Sup—Sept. 6, 1913. No. 45020.

Some New Switchgear. Illustrates and describes recently introduced switches claiming marked advantages. 700 w. Engr, Lond—Aug. 22, 1913. No. 44931 A.

Three-Phase

Speed Control of Three-Phase Motors.

Sidney A. Simon. Read before the W. of Scotland Branch of the Assn. of Min. Elec Engrs. Illustrates and describes the most important methods of threephase speed control developed. 5000 w. Ir & Coal Trds Rev—Dec. 27, 1912. No. 38907 A.

Three Wire

Three-Wire Generators versus Rotary Balancers. Alan M. Bennett. Gives an outline of the principles of operation of three-wire systems employed in presentday practice, and by comparison shows the advantages and disadvantages of each. 3000 w. Elec Rev & W Elect'n— Aug. 2, 1913. No. 44140.

See also same heading, under Distribu. tion.

Troubles

Dynamo and Motor Troubles. R. L. Mossman. Explains some of the troubles in the operation of dynamos and motors, giving causes and remedies. Ills. 2200 w. Power—April 15, 1913. No. 41208.

Turbo-Alternators

High Speed Turbo-Alternators—Designs and Limitations. B. G. Lamme. Discusses the design of turbo-alternators with reference to the limitations imposed by very high rotative speeds and large capacities. Ills. 15500 w. Pro Am. Inst of Elec Engrs—Jan., 1913. No. 39359 F.

High Speed Turbo-Alternators. B. G. Lamme. Discusses their design and limitations. 5700 w. Elec Jour—Feb., 1913.

No. 40152.

Discussion on "High Speed Turbo-Alternators — Designs and Limitations" (Lamme), New York, Jan. 10, 1913. Ills. 13800 w. Pro Am Inst of Elec Engrs-

April, 1913. No. 41674 F. 10,000 and 20,000 Horsepower Turbo-Alternators for the Société d'Electricité de Paris a Saint-Denis (Les groupes turbo-alternateurs de 10,000 et de 20,000 chevaux de la Société d'Electricité de Paris a Saint-Denis). V. Sylvestre. Description and installation. Ills. 4000 w. Tech Mod—June 15, 1913. No. 43074 D. 25000-Kilowatt Parsons Turbo-Alternator.

Illustrated description of this large turbo-alternator for the Common-wealth Edison Co. of Chicago with re-marks on the steady advance in size of separate units and the improved economy of turbo-electric machinery. 8000 w. Engng-Oct. 17 1913. No. 46243 A.

Turbo-Converter

A Turbo-Converter: A High-Speed Direct-Current Generating Unit. F. Creedy. Describes a new method devised to avoid the difficulty of collecting current from the commutator of a turbo-generator.

Turbo-Generators

ELECTRO-CHEMISTRY

Corresion

2000 w. Elect'n, Lond-Nov. 8, **1912.** No. 37633 A.

Turbo-Generators

Discussion on "Operating Characterisand "The Transient Reactions of Alterna-tors" (Durgin and Whitehead), Boston, June 28, 1912. 4500 w. Pro Am Inst of Elec Engrs—Jan., 1913. No. 39364 F. Arrangement of Exhaust Turbo-Gener-

ators. Dr. E. Rosenberg. Illustrates and describes the arrangement of turbo-generator plant at the Summer Lane station, Birmingham, Eng. 2500 w. Engr, Lond —Jan. 10, 1913. No. 39270 A. Direct-Current Geared Turbo-Genera-

tor Set at Cleveland, Ohio. Illustrated description of the largest direct-current turbo-generator set yet constructed. 600

w. Engng—Jan. 31, 1913. No. 39804 A. Direct-Current Turbo-Generator with Reduction Gears for Railway Service. Illustrates and describes two types of reduction gears, with examples of installations. 2200 w. Elec Ry Jour-Feb. 22,

1913. No. 39989. The Fire Hazard in Turbo-Generators. G. S. Lawler. Discusses the causes of the increased hazard, and the importance of employing some efficient method of reducing the fire hazard. 1200 w. Jour Am Soc of Mech Engrs-July, 1913. No. 44025 D.

Voltage Regulation

The Appearance and Control of Excess Voltage in Electrical Plants (Auftreten und Bekämpfung von Ueberspannungen in elektrischen Anlagen). W. Kummer. Mathematical discussion. Serial. part. 2800 w. Sci 1913. No. 43523 D. Schweiz Bau-June 21,

Windings

Recent Designs of Power Limiting Reactances. Eugene D. Eby. Deals with the physical construction of the apparatus, such as method of winding, bracing, spacing, and supporting, and the structure of the core. Ills. 1500 w. Gen Elec Rev—Dec., 1912. No. 37998 C.

The Amortisseur Winding. M. C.

Smith. Describes the construction of an actual amortisseur winding built into the field of a synchronous motor, and explains its theory. Discusses its advantages. Ills. 3000 w. Gen Elec Rev—April, 1913. No.

40988 C.

Researches on Air-Gap Ampere Windings (Ermittlung der Luftspalt-Ampere-windungen). F. Niethammer. Mathematical discussion with diagrams. 1600 Elek u Masch-May 4, 1913. No. 43038 D.

ELECTRO-CHEMISTRY

Albumen

A Brief Examination of the Electrical Properties of Egg-White. E. F. Northrup. Gives results of investigation. 1600 w. Jour Fr Inst — April, 1913. No. 41285 D.

Cells

A Spontaneous Electromotive Force in Cells of Alkali Metals. Jay W. Wood-row. Abstract of an article in the Phys. Reports an investigation of phe-a described. 1000 w. Elect'n, Rev. Lond—Nov. 15, 1912. No. 87810 A.
The Billiter Alkali-Chlorine Cells. Re-

views a paper by Dr. A. J. Allmand dealing with these cells. 1400 w. Engng —Dec. 6, 1912 No. 38248 A.

The Billiter Alkali-Chlorine Cells. J. Allmand. Abstract of paper read before the Faraday Soc. Deals particularly with the Billiter membrane cell. 2500 w. Elect'n, Lond—Dec. 20, 1912. No. 38866 A.

Two-Solvent Concentration Cells. cusses the concentration cells with which A. P. Laurie recently dealt in a lecture before the Faraday Society. 1500 Engng—Jan. 10, 1913. No. 39261 A. 1500 w.

New Electrolytic Alkali Cell. John B. C. Kershaw. Illustrates and describes a new cell and process, stating the advantages claimed. 800 w. Sci Am—Aug. 16, 1913. No. 44354.

The Billiter-Siemens Electrolytic Alkali Cell and Process. John B. C. Kershaw. Describes the cell and cell process, and two plants employing the process. Ills. 3000 w. Elec Rev. Lond—Aug. 15, 1913. No. 44709 A.
Electricity Direct from Coal. Emil Baur. Discusses the problem of con-

structing a galvanic cell with carbon consumption. Ills. 3000 w. Sci Am

Sup-May 31, 1913. No. 42553.

Manufacturing G. V. Storage Batteries. Illustrated description of methods used to make storage batteries for electric trucks. 900 w. Am Mach—Dec. 26, 1912. No. 38545.

See also Accumulators. under Generating Stations.

Corresion

The Rusting of the Iron Superstructure in the Simplon Tunnel. A. Danzer-Ischer. Reports investigations made, the causes of the wear and tear and of the rusting phenomena, and conditions in other tun-nels. Ills. 7200 w. Bul Int Ry Cong—. Nov., 1912. No. 37710 G.

ELECTRO-CHEMISTRY

Developments

Electrolytic Corrosion of Iron. Matthew C. Coates. Reports comparative results of tests on corrosion of commercial, steel, wrought iron, ingot iron and cast iron pipes, when subjected to damp soil, with and without applied electric current, and conclusions. 2500 w. Aust Min Stand—Dec. 5, 1912. No. 38858 B.

Dec. 5, 1912. No. 38858 B.

Contributions to the History of Corrosion. Arnold Philip. Read before the Inst. of Metals. Discusses the corrosion of distilling condenser tubes. 2500 w. Engng-March 14, 1913. No. 40829 A.

Electrolysis from Stray Electric Cur-Albert F. Gans. Explains the theory of electrolytic conduction and considers the sources of electric currents, the effects, damage and design, remedial measures, etc. Ills. 14000 w. Stevens Ind—Oct., 1912. No. 38219 D.

Electrolysis from Stray Electric Currents. Albert F. Gans. Gives an explanation of the theory of electrolytic conduction, and considers the sources and effects of stray electric currents, electrolysis surveys, etc. 7500 w. Am Gas Lgt Jour-March 10, 1913. Serial. 1st part.

The Corrosion of Aluminium. G. H. Bailey. Read before the Inst. of Metals. Discusses the corrosion of aluminium by water and by solutions of common salt,

giving results of investigations. 2000 w. Engng—March 14, 1913. No. 40828 A. Iron Rust, Its Causes and Its Prevention Through Painting (Das Rosten des Eisens, seine Ursachen und seine Verhütung durch Anstriche). Georg Pfleiderer. A study of rust prevention. 4200 w. Zeit des Ver deutscher Ing—Feb. 8, 1913. No. 40537 D.

Stray Railway Currents and the Electrolysis of Metallic Structures (Le correnti vaganti tramviarie e la corrosione elettrolitica delle strutture metalliche). Guido Peri. Production of stray currents from electric conduits and studies on their effects. Ills. Serial. 1st part. 2100 w. Industria—Feb. 9, 1913. No. 40613 D.

Electrolysis from Stray Electric Currents. Read before the New England Assn. of Gas Engrs. Explains the theory of electrolysis, the sources of stray electric currents, general effects on under-ground piping, etc. Ills. 4500 w. Can Engr—April 3, 1913. Serial. 1st part. No. 41099.

Copper in Steel-Its Influence on Corrosion. D. M. Buck. Read before the Am. Chem. Soc. Gives results of a series of tests, which show that a small copper content increases the life of sheets. Ills. 2200 w. Ir Age—April 17, 1913. No. 2200 w. 41272 C.

An Electrolytic Theory of the Corrosion of Iron. Bertram Lambert. Read before the Faraday Soc. Aims to show that a natural development of the ideas of Faraday on electrolysis will give the beginnings of a satisfactory theory of the corrosion of iron. 4000 w. Met & Chem Engng—May, 1913. No. 41903 C.

The Corrosion of Lead. Richard H.

Gaines. Discusses the effects of acids and alkalies with particular reference to leadlined pipe. 3000 w. Eng Rec—June 21, 1913. No. 43109.

The Corrosion of Cast-Iron Reviewed. Richard H. Gaines. Considers its nature

richard H. Gaines. Considers its nature and causes and the practice to secure resistance to destruction. 2500 w. Ir Age—June 5, 1913. No. 42659 C. Electrolytic Corrosion of Iron in Soils. Burton McCollum and H. K. Logan. Deals with the fundamental laws governments. ing electrolytic corrosion of iron in coils, ing electrolytic corrosion of iron in colls, giving experimental data showing the effect of different factors, and a number of conclusions. 58 pp. Pro Am Inst of Elec Engrs—July, 1913. No. 43341 F.

The Effect of Various Substances on the Rate of Corrosion of Iron by Sulphuric Acid. O. P. Watts. Read before the Am. Elec. Chem. Soc. Considers the

effect of various metals deposited on iron. 3000 w. Elect'n. Lond—July 11, 1913. No. 43893 A.

An Electrolytic Method of Preventing Corrosion of Iron and Steel. J. K. Clement and L. V. Walker. An account of experiments made to develop an electrolytic method for preventing corrosion. 4000 w. U. S. Bureau of Mines—Tech Paper 15. No. 44486 N.

The Corrosion of Condenser Tubes.

Guy D. Bengough and Richard M. Jones. Second report to the Corrosion Committee of the Inst. of Metals. Gives experiments and discusses results. 6000 w. Mech Engr—Aug. 29, 1913. Serial, 1st part. No. 45035 A.

See also Refrigeration, under MECHANI-CAL ENGINEERING, Heating and Cooling; also Corrosion under MINING AND ME-TALLURGY, Iron and Steel, and Boilers, under MECHANICAL ENGINEERING, Steam

Engineering.

Cvanamid Manufacture and Uses of Cyanamid. E. J. Pranke. Describes its preparation; its use as a fertilizer, and other uses. 2200 w. Chem Engr-March, 1913. No. 40926 C.

Developments

The Present Status of the Electro-Chemical Industry (Der gegenwärtige Stand der elektrochemischen Industrie). Heinrich Paweck. An outline of the pres-

ELECTRO-CHEMISTRY

Electric Furnaces

ent investigations along electro-chemical lines. 8800 w. Elek u Masch (Special)—March, 1913. No. 41495 D.

Electric Furnaces

Electric Furnace Methods of Steel Production. John B. C. Kershaw. Outlines and gives details of Heroult furnaces at South Chicago and Worcester, Mass. 5500 w. Ir Trd Rev—Nov. 7, 1912. Serial. 1st part. No. 37322.

Induction Furnaces and their Relation to the Steel Industry. Joh. Härden. Considers the application to the production of high-grade steel, and gives details of construction of induction furnaces and the way found necessary to make the furnace linings. Ills. 6000 w. Elect'n, Lond—Dec. 13, 1912 (Special.) No. 38851 D.

Induction Furnaces for Steel Refining. John B. C. Kershaw. The Kjellin and Röchling-Rodenhauser types are discussed in the present number. 2000 w. Engr. Lond—Dec. 20, 1912. Serial, 1st part. No. 38894 A.

Electric Furnaces in the Manufacture of Steel. Edward F. Law. A general account of types available, discussing their characteristics and limitations. 3000 w. Elect'n, Lond—Dec. 13, 1912. (Special.) No. 38850 D.

The Electric Arc Furnace in Steel Production. W. S. Gifford. Illustrates and describes details of the arc type of furnace as developed by Dr. Heroult. 2500 w. Elect'n, Lond—Dec. 13, 1912. (Special.) No. 38852 D.

The Electric Furnace in the Production of Iron from Ore. D. A. Lyon. A critical discussion of the present status and a comparison of the Scandinavian and California practices. Ills. 4500 w. Met. & Chem. Engng—Jan., 1913. No. 38969 C.

Electric Furnace for Making Steel for Castings. C. H. Von Baur. Illustrated description of the first Roechling-Rodenhauser furnace installation in the United States, at Lansdowne, Pa. 3000 w. Ir Trd Rev—Jan. 9, 1913. No. 38920.

Electric Crucible Furnace for Refining Steel. Illustrates and describes the principal features. 1500 w. Ir Trd Rev—Feb. 13, 1913. No. 39844.

Heat Losses in Furnaces. F. A. J. Fitzgerald. The importance of preventing losses of heat, particularly in electric furnaces, is discussed, and attention is called to points in furnace design. 1200 w. Bul Am Inst of Min Engrs—March, 1913. No. 40890 F.

Electric Hardening Furnaces. M. Unger. Illustrated description of these furnaces and their operation. 2500 w. Gen Elec Rev—March, 1913. No. 40246 C.

The Electric Refining Furnace for Cast

Steel. J. H. Stansbie. Abstract of a paper before the Birmingham branch of the British Found. Assn. Describes principal types of electric furnaces, discussing their operation. 2200 w. Foundry—March, 1913. No. 40285.

Advantages of Small High Speed Electric Furnaces. Carl Hering. Analyzes and discusses the effect of rate of melting and the number of charges on the energy required, illustrating by estimated quantitative data. 4500 w. Met & Chem Engng—April, 1913. No. 41043 C.

Some Notes on the Electric Vacuum Furnace. Illustrates and describes furnaces forming a part of the equipment of the research laboratory of the General Electric Co. 1100 w. Brass Wld—May, 1913. No. 42427.

Notes on the Kjellin Electric Furnace in Steel Manufacture (Note sul forno elettrico Kjellin per la fabricagione dell'acciaio). Giacomo Bianchetti. Explanation of the furnace, and details of its operation. Ills. 2200 w. Industria—May 4, 1913. No. 42503 D.

Helfenstein Large Electric Furnaces

Helfenstein Large Electric Furnaces (Grosse elektrische Oefen, Bauart Helfenstein). Max Oesterreich. Illustrated description of the several types erected. 2800 w. Stahl u Eisen—Feb. 20, 1918. No. 40506 D.

The Helfenstein Large Electric Furnaces. Illustrates and describes recent developments in the production of ferrosilicon and calcium carbide and in the smelting of Swedish iron ores. 1800 w. Ir Age—June 19. 1913. No. 42938 C.

Ir Age—June 19, 1913. No. 42938 C. New Steel Foundries Using Electric Furnaces. Oliver J. Abell. Interesting data concerning new types and costs. Ills. 1000 w. Ir Age—May 29, 1913. No. 42556 C.

An Electric Furnace for Experiments in Vacuo at Temperatures Up to 1500° C. R. E. Slade. Abstract from Pro of Roy Soc. Illustrated description. 1200 w. Elect'n, Lond—June 27, 1913. No. 43623 A.

Some Recent Improvements in the Use of the Electric Furnace. Brief account of novel uses for the electric current in industry. Ills. 2200 w. Sci Am—Aug. 2, 1913. No. 44071.

Electric Furnaces, Their Design, Characteristics and Commercial Application. Woolsey McA. Johnson and George N. Sieger. Aims to give concisely the scientific engineering and commercial principles and facts involved in the industrial utilization of electric furnaces. 3500 w. Met & Chem Engng—Sept., 1913. No. 44971 C.

The Electric Blast-Furnace (Le Haut-

fourneau electrique). Paul Nicou. A study of the Domnarfret, Trollhättan, Hagfors, Hardanger, Héroult and Tinfos types. Ills. Serial, 1st part. 6000 w. Tech Mod—Aug. 15, 1913. No. 45338 D.

See also Electrometallurgy, under MIN-ING AND METALLURGY, Iron and Steel, and Electric Furnaces, under MINING AND METALLURGY, Lead and Zinc.

Electrochemical Society

American Electrochemical Society Papers at the International Congress. Abstracts of three papers. 3000 w. Met & Chem Engng-Nov., 1912. No. 37254 C. Electrodes

The Manufacture of Carbon Electrodes for Electro-Metallurgical Purposes (Die der Kohleelektroden Herstellung für elektrometallurgische Zwecke). Illustrated description of practice at several 4200 w. Stahl u Eisen-Nov. 7. No. 38402 D. **1912.**

Electrode Suspension in Electric Furnaces (Die Elektrodenfassungen bei Elektro-öfen). Discussion on the two general methods of suspension; by cables, and clamps, and methods of replacement. Ills. Serial. 1st part. 2500 w. Stahl u Eisen — March 20, 1913. No. 41407 D.

Electrodes for Electric Furnaces. G. Basil Barham. Discusses electrodes and their manufacture and related matters. 1200 w. Elec Rev, Lond—April 18, 1913.

No. 41750 A

Carbon Electrodes for Electrolytic Cells. John Härdén. Information concerning "electrolytic carbons," and the testing of the electrodes for electrolysis. 3500 w. Met & Chem Engng — May, 1913. No. 41899 C.

Electrode Holder Construction for Electric Furnaces. Illustrates and describes the principal types of electrode holders for furnaces, with additional notes on joining and dimensioning electrodes. 4000 w. Met & Chem Engng—June, 1913. No. 42605 C.

Carbon Electrodes for Electrolytic ells. Joh. Härdén. Discusses the refor Electrolytic Cells. spective merits of amorphous and graphitized carbons and describes the tests that should be applied to determine the quality of carbons. 4000 w. Elect'n, Lond—July 11, 1913. No. 43894 A.

Electrolysis

Effect of Electric Current on Concrete. Abstract of a paper by Dr. E. B. Rosa, Burton McCollum, and O. S. Peters. editorial. Points out possible dangers from electrolysis, discussing the cause and best method of mitigating the trouble. 2500 w. Elec Wld—Dec. 28, 1912. 38692.

Electrolysis in Fluid Sulphur-Dioxid

(Elektrolyse in verfluessigtem Schwefeldioxyd). L. S. Bagster and B. Steele. A study of the action in various solutions containing sulphur dioxid. Ills. Serial, 1st part. 3000 w. Elektrochem Zeit-Dec., 1912. No. 39056 D.

Report of the Committee on Electrolysis. Abstract of report to the Am. Elec. Ry. Assn. Gives results of tests and discusses factors affecting corrosion. 3500 w. Elec Ry Jour-Oct. 16, 1913. (Daily

Ed.) No. 45927.

Electrometallurgy

Electric Melting of Copper and Brass. C. A. Hansen. A summary of theoretical requirements, results obtained in furnaces of the Rockwell, Charlier and Schwartz types, and in a few experiments with an electric furnace. Ills. 3500 w. Am Inst of Metals—Sept., 1912. No. 43288 N. The Electric Furnace for Brass Melt-

ing. G. H. Clamer and Carl Hering. A general discussion of the factors in-

Volved, with available data. 4000 w. Am Inst of Metals—Sept., 1912. No. 43286 N. The Crystallizing Properties of Elec-tro-Deposited Iron. Dr. J. E. Stead and Prof. H. C. H. Carpenter. Read before the Iron & Steel Inst. (abstract). Describes and explains results of a number of experiments. Ills. 6000 w. Ir & Coal Trds Rev—Sept. 5, 1913. 45197 A.

The Smelting of Tin Ore in the Electric Furnace. Abstract translation from La Revista Minera y Met. de Madrid. Shows that the electric process can be advantageously employed in places where the ores are good, but not very rich, and whose waterfalls can be utilized. 1500 Min Jour-Oct. 18, 1913. 46228 A.

See also Electric Furnaces, under MINING AND METALLURGY, Iron and Steel, and Electric Furnaces; under MINING AND METALLURGY, Lead and Zinc.

Electroplating

Electro-Deposition of Metals and Alloys. From a paper by George P. Lee, in the Trans. of the Inst. of Marine Engrs. Concerning the invention of the Italian electrochemists, Messrs. Marino. 2500 w. Ir & Coal Trds Rev-Nov. 8, 1912. No. 37655 A.

Equipment and Management of Nickel Baths. Seymour W. Rowsbar. Detailed directions. 1800 w. Foundry — Dec., 1912. Serial. 1st part. No. 37990.

The Rapid and Accurate Estimation of Silver in Silver Plating Solutions. Ex-

plains a method based on the insolubility of silver sulphide in a dilute potassium cy-2200 w. anide solution. Brass Wld-Jan., 1913. No. 39345.

· Electroplating

ELECTRO-CHEMISTRY

Oxygen

The Electrodeposition of Platinum. Gives a solution, first used by Roseleur,

which gives excellent results. 1200 w. Brass Wld—Feb., 1913. No. 40148.

Application of Chemistry in the Plating Room. E. P. Later. Describes the apparatus and solutions required, with practical suggestions. 2200 w. Foundry -March, 1913. Serial. 1st part. No.. 40286.

Equipment and Management of Cleaning Baths. Seymour W. Rowsbar. The cause of rust-covered corroded spots and the remedy. 2500 w. Foundry-May, 1913. No. 41853.

The Electrodeposition of Brass and Bronze. C. W. Bennett. Read before the Am. Elec.-Chem. Soc. Gives recommended solutions and information. 1500 w.

Chem Engr—April, 1913. No. 41824 C.
The Estimation of the Free Cyanide in Brass Plating Solutions. Describes a method of maintaining the solution so that the same color can constantly be obtained on the deposit. Ills. Ž200 w.

Brass Wld—May, 1913. No. 42426. Re-Plating Old Silver-Plated Flat-Wear. Discusses this class of work, its cost, methods and troubles. 2000 Brass Wld—June, 1913. No. 42946.

Preventing "Spotting-Out" of Plated Work by Means of Hot-Water. Explains the causes of spotting and the method of using the hot water. 800 w. Brass Wld -July, 1913. No. 43741.

Notes on the Electro-Deposition of Nickel. Woolsey McA. Johnson. Discusses hot and cold solutions, and why nickel deposited at high current density will not "curl up." 1200 w. Brass Wld —Aug., 1913. No. 44509.

Electroplating at a Typewriter Works. James Stedman. Illustrates and describes details of copper and nickel-plating equipment at the works of the Underwood Typewriting Machine, Hartford, Conn. 3000 w. Ir Age—Sept. 25, 1913. No. 45439 C

Spotting-Out and Silver Plating. C. F. Burgess and L. T. Richardson. Gives information obtained in a study of this phenomenon. 3500 w. Am Inst of Metals-Oct., 1913. No. 46281 N.

Etching The Electrolytic Etching of Brass. Illustrates and discusses the method employed. 2700 w. Brass Wld—Feb., 1913. No. 40147.

Hydrogen The Production of Hydrogen Through Very Low Temperatures by the Linde, Frank and Caro Process. (La fabrication de l'hydrogène au moyen des très basses températures par le procédé Linde,

Frank et Caro.) Henri Brot. A general description of the process. Ills. 4000 w. Genie Civil—June 28, 1913. No. 43577 D. Industrial Chemistry

The Latest Achievement and Problems of the Chemical Industry. Carl Duisberg. Lecture before the Int. Cong. of Ap. Cham. A general review. 8500 w. Lecture before the Int. Cong. of A Chem. A general review. 8500 Chem Engr—Dec., 1912. No. 38817 C. Nitrogen

Oxidation of Atmospheric Nitrogen and Development of Resulting Industries in Norway. Samuel Eyde. From a lecture delivered in New York City. Describes methods used in the manufacture of nitrate of lime, nitrate of soda, nitric acid and nitrate of ammonia. 3000 w. Chem Engr.—Nov., 1912. No. 37919 C.

The Utilization of the Nitrogen of the Air. Arthur A. Noyes. Explains the enormous quantities of nitrogen compounds used as fertilizers and in other industries, and discusses the present and prospective sources of supply, especially the fixation of atmospheric nitrogen. 2500 Pop Sci M — March, 1913. 40428 C.

The Ostwald Process for Making Nitric Acid from Ammonia. Describes the plant for carrying out the process on a commercial scale, giving running expenses and profits. 3500 w. Ir & Coal Trds Rev—May 23, 1913. No. 42760 A.

The Fixation of Atmospheric Nitrogen. P. H. S. Kempton. Considers fixation with oxygen, fixation with hydrogen, and fixation with carbon. 1700 w. Elec Rev, Lond—April 4, 1913. No. 41221 A.

The Problem of the Commercial Fixation of Nitrogen (Le probléme de la fixation industrielle de l'azote). Camille Matignon. General description of the various processes employed, including sodium nitrate, and electrical. 10200 w.
Bull Soc d'Encour—June, 1913. No.
43571 E. + F.

Low Temperatures in the Fixation of Nitrogen (Le rôle des basses temperatures dans l'industrie de la fixation de l'azote). Georges Claude. The necessity and maintenance of low temperatures and description of the Claude apparatus. Ills. 6400 w. Mem Soc Ing Civ de France —May, 1913. No. 43553 G.

Nitrogen and the Electric Furnace. H. G. A. Stedman. From an address deliv-Middlesborough. ered in Discusses features connected with the development of electricity for producing certain valuable compounds of nitrogen. 5000 w. Ir & Coal Trds Rev—Sept. 5, 1913. No. 45198 A.

Oxygen
The Production of Oxygen by the Linde

Atoms

ELECTRO-PHYSICS

Dielectrics

and Claude Processes. Brief review of processes for the production of oxygen, with detailed description of the two processes named, and matters related. Ills. & Plate. 3500 w. Engr, Lond—April 4, 1913. Serial. 1st part. No. 41243 A.

Ozone

Nature, Production, and Uses of Ozone. W. H. Thompson. Considers the characteristics of ozone, methods of production, physiological action, and commercial uses. 4500 w. Elec Jour—Nov., 1912. No. 87884.

ELECTRO-PHYSICS

Atoms.

Photography of Particles Ejected from Atoms. Reviews a discourse by C. T. R. Wilson delivered at the Royal Inst. Illustrations and explanation of the experiments described. 2500 w. Engng—March 14, 1913. No. 40826 A.

The Structure of the Atom. Brief abstract of lectures by Sir J. J. Thomson, dealing postional superior with the cleaning.

The Structure of the Atom. Brief abstract of lectures by Sir J. J. Thomson, dealing particularly with the electrical features. 2000 w. Elect'n, Lond—March 21, 1913. Serial. 1st part. No. 41002 A.

The Structure of the Atom. R. A. Mil-

The Structure of the Atom. R. A. Millikan. Describes the experiment by means of which the author succeeded in proving the atomic nature of electricity, and discusses the probable nature of energy radiation. 6000 w. Gen Elec Rev—July, 1913. No. 43326 C.

The Valve Action of Zirconium Anodes. L. H. Walter. Shows that zirconium exhibits a pronounced valve effect. 1000 w. Elect'n, Lond—Oct. 3, 1913. No. 45842 A.

Condensers

An Electrolytic Condenser and Its Application to a Sparkless Type of Contact-Breaker. Dr. K. Siegl. Abstract translation from Elek. Zeit. A report of experimental investigations. 1200 w. Elect'n, Lond—Jan. 10, 1913. No. 39247 A.

On the Best Use of a Condenser When Used as a Shunt to a Telephone in Wireless Telegraphy. H. Smith. Abstract of a paper in Pro. Univ. of Durham Phys. Soc. An account of work undertaken to determine the most advantageous relations between the constants of the various parts of the circuit. 1200 w. Elect'n, Lond—Jan. 17, 1913. No. 39459 A.

Saturation Currents in Selenium. F. Kaempf. States results of an investigation. 1700 w. Elect'n, Lond—Nov. 8, 1912. No. 37635 A.

Conductors

Electrothermal Phenomena at the Contact of Two Conductors with a Theory of a Class of Radiotelegraph Detectors. W. H. Eccles. Abstract of a paper read before the Phys. Soc. 2800 w. Elect'n, Lond—Sept. 5, 1913. No. 45145 A.

Some Experiments on Contracts Be-

tween Bad Conductors. W. H. Eccles. Report of research work and results. 1800 w. Elect'n, Lond—Oct. 3, 1913. No. 45843 A.

Dielectrics

Further Investigation Into Nature of Corona and Dielectric Strength of Air. F. W. Peek, Jr. An illustrated study of the nature and properties of the loss and behavior of the air. 2500 w. Gen Elec Rev—Dec., 1912. No. 37997 C.

Tests on Dielectric Rigidity on Rubber-Insulated Cables and Wires Used in Electric Installations (Essais de rigidité diélectrique sur des cables et des fils sous caoutchouc employés dans les installations électriques) M. H. Bureau. Report of tests at the Central Electric Laboratory. Ills. 6300 w. Bull Soc Int d Électriciens —Aug., 1912. No. 38480 F.

The Properties of Dielectrics in Alternating-Current Fields (Gutta-Percha). G. L. Addenbrooke. Gives figures for the dielectric loss in gutta-percha when subjected to very low frequencies, such as those used in submarine cable work, upwards. 3000 w. Elect'n, Lond—Jan. 10, 1913. No. 39250 A.

Law of Corona and Dielectric Strength of Air. F. W. Peck, Jr. Explains a theory of rupture. 2500 w. Pro Am Inst of Elec Engrs—June, 1913. No. 43210 F.

The Electric Strength of Air. J. B. Whitehead and T. T. Fitch. Describes the results of a series of investigations on the effects of pressure, temperature and density of gas upon the formation of the corona in air. 3000 w. Pro Am Inst of Elec Engrs—June, 1913. No. 43209 F.

An Oscillograph Study of Corona. Edward Bennett. Describes a method of obtaining oscillograms of the charging current and gives a series obtained by the method. 6500 w. Pro Am Inst of Elec Engrs—June, 1913. No. 43216 F.

A Theory of the Glow Discharge from

A Theory of the Glow Discharge from Wires. J. S. Townsend. Report of investigations of currents that escape from high potential wires when they are surrounded by a glow or corons. 2500 w.

Electrical Phenomena

ELECTRO-PHYSICS

Insulation

Elect'n, Lond—June 6, 1913. No. 42879 A.

The Positive and the Negative Corona and Electrical Precipitation. W. W. Strong. High-voltage alternating current is rectified by using the Lemp synchronously rotated commutator and the coronas produced by the rectified current are used to cause the removal of suspended matter from gases. Ills. 2500 w. Pro Am Inst of Elec Engrs—June, 1913. No. 43208 F.

The Nature of Dielectric Fatigue. W. Holttum. Abstract of a communication to the Inst. of Elec. Engrs. A report of tests made to determine the relation between the duration of application of the pressure and the instantaneous strength, with conclusions. 2000 w. Elect'n, Lond—July 25, 1913. No. 44164 A.

Electrical Phenomena

The Oil-Drop Method of Studying Electrical Phenomena in Gases. R. A. Millikan. Abstract of paper read before the Am. Elec. Chem. Soc. Outlines methods and results. 3500 w. Elect'n, Lond—Dec. 13, 1912. (Special.) No. 38845 D.

Electrons

Induction Laws and the Electron Theory (Induktionsgesetz und Elektronentheorie). Karl Pichelmayer. A statement of the hypothetical relation between these actions. Diagrams. 3200 w. Elek u Masch—June 1, 1913. No. 43044 D. The Emission of Electrons from Tung-

The Emission of Electrons from Tungsten at High Temperatures. Prof. O. W. Richardson. An experimental proof that the electric current in metals is carried by electrons. 2500 w. Sci Am Sup—Aug. 16, 1913. No. 44355.

dectroscope.

How to Make an Electroscope. Charles E. Benham. From the Eng. Mech. & Wld. of Sci. Detailed directions. 1200 w. Sci Am Sup—March 15, 1913. No. 40639.

Endosmose

Electrical Endosmose. W. D. Bancroft. Abstract of a paper read before the Am. Elec. Chem. Soc. Shows how certain apparent exceptions to the general theory can be accounted for. 1800 w. Elect'n, Lond—Jan. 17, 1913. No. 39462 A.

Energy
Flow of Energy Near a Source of Electric Current. J. Willard Milnor. Illustrates the physical meaning of Poynting's theorem. Traces the direction of energy flow in the immediate vicinity of typical generators. 1500 w. Gen Elec Rev—Feb., 1913. No. 39615 C.
The Production and Distribution of En-

The Production and Distribution of Energy. Samuel Insull. A study of the economic method of production and distribution of electrical energy and the uses

to which it can be applied. Ills. 5500 w. Jour Fr Inst—June, 1913. No. 43247 D.

xplosions

A Case of Gaseous Explosion Caused by the Electric Heating of Bitumen in Cable Troughs. Prof. W. M. Thornton and Dr. J. A. Smythe. An investigation concluding that bitumen gas lies between marsh gas and coal gas in its inflammability. 2500 w. Elect'n, Lond—Aug. 22, 1913. No. 44907 A.

Frequency

Discussion on "Frequency," Schenectady, N. Y., May 17, 1912. Discusses D. B. Rushmore's paper. 4000 w. Pro Am Inst of Elec Engrs—Nov., 1912. No. 37902 F.

Typerbolic Functions.

Application of Hyperbolic Functions. Outlines of two lectures by Dr. A. E. Kennelly, at the Polytechnic Inst., Brooklyn, N. Y. Considers long a. c. energy transmission lines, and loaded and unloaded telephone lines. 1500 w. Elec Wld.—March 1, 1913. No. 40257.

Hysteresis

Experiments on Magnetic Hysteresis (Untersuchung über magnetische Hysteresis). F. Holm. Investigations on symmetrical and unsymmetrical magnetized cycles. Diagrams. 3400 w. Zeitschr des Ver deutscher Ing—Oct. 26, 1912. No. 37454 D.

The Hysteresis Loop and Index. W. M. Thornton. Gives a brief analysis of the forms of electric and magnetic hysteresis loops and discusses the question of the hysteretic index with a view to establishing its physical significance. 3000 w. Elect'n, Lond—May 16, 1913. No. 42531 A.

See Discussions, under Miscellany.

Inductance

Inductance of Aerial Split Conductors. Louis Cohen. Presents a formula for deriving the inductances of subdivided lines. 600 w. Elec Wld—Nov. 9, 1912. No. 37371.

The Influence of Cable Inductance Upon Duplex Balances. George Wald. Discusses the influence of cable inductance from a mathematical point of view, and shows the effect of the various factors on the working of the line. 2000 w. Elect'n, Lond—July 25, 1913. No. 44166 A.

Insulation

A Study of Insulation Problems. C. Fortescue. Revised from a paper read before the Am. Inst. of Elec. Engrs. Emphasizes a principle of electrostatic theory by which the units of a system of conductors may be arranged to protect

ELECTRO-PHYSICS

Oscillograms

one another. Ills. 3500 w. Elec Jour— July, 1913. No. 43807.

A New Method of Hermetically Sealing

Electrical Conductors Through Glass and Other Vitreous Substances. George B. Burnside. Describes method depending for its success upon the cooling of the conductor and the surrounding glass in such a way that local differences of temperature are avoided. 1500 w. Elect'n, Lond.—July 4, 1913. No. 43707 A. The Uses of Artificial Insulating Ma-terials in the Construction of Electrical

Apparatus. H. Passavant. Abstract of a paper read before the Elektrotechnische Verein. States the essential properties of insulating material and discusses points which have arisen in connnection with an investigation by a commission. 1800 w. Sci Am Sup—July 19, 1913. No. 43784.

See also Micarta, under Electro-

Physics.

Magnetic Properties

Charged Surface Layers in Contact Potential Phenomena Between Metals. N. Shaw. Abstract of an article in the Phil. Mag. Explains methods of measuring the contact potential, the detection of charged surface layers, and influence of the gaseous medium. 1200 w. Elect'n, Lond—April 11, 1913. No. 41381 A.

The Influence of Vibration and Heat-

ing on the Magnetic Properties of Sheet Iron (Einfluss von Erschütterungen und Erwärmungen auf die magnetischen Erwärmungen Eigenschaften von Eisenblech). E. Gumlich and W. Steinhaus. Details of experimental research and general results. Diagram. 3000 w. Stahl u Eisen—Sept. 4, 1913. No. 45382 D.

Magnetism

The Effect of a Magnetic Field on Ionization Currents. William Duane. Describes experimental investigations. 4000 w. Am Jour of Sci—Feb., 1913. No. 40145 D

The Magnetic Properties of Cast Iron from the Standpoint of an Electro-Machinist (Die magnetischen Eigenschaften des Gusseisens, betrachtet vom Standpunkte des Elektro-Maschinenbauers). Friedrich Goltze. Address before the November, 1912, meeting of the Vereins deutscher Giessereifachteute. Ills. Serial, 1812, 2004. Giess. Zeit. Len 1 1st part. 2100 w 1913. No. 40014 D. 2100 w. Giess-Zeit-Jan 1,

The Electron Theory of Magnetism. Elmer H. Williams. Explains the essential features of the theory and gives an account of the properties of ferro-magnetic crystals, with experimental evidence in favor of the theory, and an account of phenomena which it fails to satisfy. 64 pp. Univ. of Ill, Bul 62—Nov. 4, 1912. No. 40417 N.

Magnetism and Electricity. F. J. Kean. Reports experimental investigations to determine the effect of magnetization upon the modulus of elasticity. Ills. 1200 w. Elec Wld—March 15, 1913. No. 40671.

Review of Electromagnetism (Revue d'electromagnétisme). Eugène An outline of the theories advanced by various students in recent years. 9000 w. Rev gen des Sciences — April 30, 1913. No. 42181 D.

The Loss of Residual Magnetism in Heated Metals (La chute du magnétisme rémanent des métaux au chauffage). Félix Robin. Results of experiments on various magnetic materials. Ills. 10,000 w. Bull Soc Int d Electriciens—May, 1913. No. 43564 F.

The Reluctivity of Silicon Steel as a Linear Function of the Magnetizing Force. J. D. Ball. Deals with the reluctivity which over a wide range is a linear function of the magnetizing force. Curves. 1500 w. Gen Elec Rev—Oct., 1913. No. 45589 C.

A Magnetic Inspection of Sheet Iron Zur magnetischen Untersuchung von Eisenblechen) K. Zickler. A study relative to the use of sheet iron in the construction of electrical machines and apparatus. Serial. 1st part. 3300 w. Elek u Masch—Aug. 31, 1913. No. 46076 D.

Calculations on D. C. Electro-Magnets (Ueber die Berechnung der Gleichstrom-Elektromagnete). Franz Kraus. Presents the three typical conditions and cites six examples. Ills. 5200 w. Elek u Masch
—Oct. 20, 1912. No. 37475 D.

Demagnetization and Recovery of Permanent Magnets. Shiro Sano. Reports results of experiments made to ascertain the effect of mechanical mistreatment and the recovery. 800 w. Elec Wld—Jan. 11, 1912. No. 38997.

Micarta

Properties and Uses of Bakelite Micarta. R. W. E. Moore. Information concerning the characteristics and appli-cations of this material. Ills. 1000 w. Elec Jour—July, 1913. No. 43806. Oscillations

Some Oscillograms of Condenser Discharges, and a Simple Theory of Coupled Oscillatory Circuits. J. A. Fleming. Abstract of a paper read before the Phys. Soc. A discussion of the phenomena. 1800 w. Elect'n, Lond—July 25, 1913. No. 44165 A.

Oscillograms

Interferential Oscillography: The Telephone Instrument as a Meter (Oscillographic interférentielle. Le téléphone in-

Physiological Effects

ELECTRO-PHYSICS

Resistance

strument de mesure). A Guyan. A method of precision in the determination of wave lengths. Ills. 4900 w. Bull Soc Int des Electriciens—July, 1913. No.

Physiological Effects

The Principal Causes of Injury by Electricity. From a paper by Dr. H. Shows that the extent and nature of the contact is often of more significance than the character of the source. 2500 w. Sci Am Sup—July 26, 1913. No. 43864.

Physiological Effects and Dangers from Electric Currents (Apropos des effets physiologiques et des dangers des courants électriques). Leon Gerard. A résumé of studies made by various stu-

dents. 2800 w. Soc Belge des Elec— May, 1913. No. 43552 E. Biological Structure and Electrical Phenomena (Les mecanismes biologiques et les phenomenes électriques). Daniel Berthelot. A review of the work done by physicists along the lines of electro-medicine. 3800 w. Bull Soc Int d Electriciens-May, 1913. No. 43563 F.

Precipitation

Electric Precipitation of Suspended Particles. Linn Bradley. Brief review of the Cotrell processes for removing suspended particles from gases by means of high tension electric current, or electric field, and outlines some of the applications. Discussion. 8000 w. Pro plications. Discussion. 8000 w. Pro Engr's Soc of W Penn — April, 1913. No. 42827 D.

Pseudo-Resonance

The Phenomenon of Pseudo-Resonance Observed in Néon Tubes (Sur des phénomènes de pseudo-résonance observés dans le fonctionnement des tubes au néon). A study of the causes of this G. Claude. Diagrams. 2400 w. Bull Soc Int d'Électriciens-Dec., 1912. 39079 F.

Radiations

Radiations Old and New. W. H. Bragg. Lecture before the British Assn. Considers corpuscular and other rays and their relation to molecular physics. Ills. 2500 w. Sci Am Sup—May 31, 1913.

Serial, 1st part. No. 42552.
Rays of Positive Electricity. Review of a lecture by Sir J. J. Thomson to the Royal Society. 3500 w. Engng—May 30, 1913. No. 42785 A.

Radioactivity

Radioactivity. Edwin Plimpton Adams. Aims to show how far old notions of the constitution of matter are still valid, and where the physical sciences stand at present in the light of the discoveries that have been made since the discovery

of radioactive phenomena. Ills. 30000 w. Pro Am Inst of Elec Engrs-May,

1918. No. 42456 F.
Radioactivity. Reviews three lectures
by Prof. E. Rutherford, delivered at the Royal Institution. 4000 w. Engng-July

11, 1913. No. 43899 A.

Radioactivity. Abstract of three Tyndall lectures at the Royal Institution by Prof. E. Rutherford. Deals with the more recent researches. 2800 w. Elect'n, Lond-June 27, 1913. No. 43626 A.

Radiography

Some Recent Developments in Radiography. H. Clyde Snook. Diagram and description of the Snook röntgen apparatus and its use; an improvement in stand development: a plate-holder frame, a penetrometer, &c. Ills. Discussion. 4500 w. Jour Fr Inst—Jan., 1913. No. 39354 D

The Recombination of Ions Produced by Röntgen Rays. S. J. Plimpton. port of experimental investigations and results. 4500 w. Am Jour of Sci-Jan., 1913. No. 39436 D.

Reactance

Synchronous and Asynchronous Reactance. J. Rezelman. Discusses fully the case of alternators having solid salient poles, both single and poly-phase. 2500 w. Elect'n, Lond—Dec. 27, 1912. Serial. 1st part. No. 38910 A.

The Reactance of Stranded Conductors. H. B. Dwight. Devises a formula for calculating the reactance of a 7-wire strand. 900 w. Elec Wld-April 19, 1913. No.

The Measurement of Reactance by the "Maximum Power" Method. A. F. Bur-Describes the method, giving 1000 w. Elect'n, Lond—April curves. 25, 1913. No. 41918 A.

Rectifiers

The Advancement of the Mercury Arc Rectifier. Harry F. Perkins. Illustrates and describes a recent form of iron tube which is used in place of glass in the development of the rectifier for high power. 1500 w. Met & Chem Engng—Sept., 1500 w. Met & 1913. No. 44967 C.

Physical Phenomena of the Mercury Arc Rectifier. F. Parkman Coffin. Reviews some of the more important related phenomena. Ills. 6000 w. Gen Elec Rev—Oct., 1913. No. 45579 C.

See Mercury Vapor, under Lighting.

A Simple Kelvin Double Bridge for Comparing Two Nearly Equal Low Resistances. S. W. Melsom. Describes a simple form of Kelvin bridge designed for the purpose of testing ammeter shunts or other resistances which are set

nearly to a given value. Ills. 1000 w. Elect'n, Lond — Feb. 28, 1913. No. 40467 Å.

Resistivity of a few metals Through a Wide Range of Temperature. Edwin F. Northrup and V. A. Suydam. Partial report of an investigation in progress to perfect a method for easily measuring the resistivities of metals and alloys, and to obtain data over a great range of temperature. 2000 w. Jour Fr Inst—Feb., 1913. No. 40093 D.

The Resistance of Contacts. Dr. Ludwig Binder. Abstract trans. from Elektrotechnik & Maschinenbau. Refers to contacts formed by brushes on slip-rings

contacts formed by brushes on slip-rings and commutators. 1500 w. Electr'n, Lond—Feb. 14, 1913. No. 40116 A. Study of Resistance of Carbon Contacts. A. L. Clark. Abstract from Phys. Rev. Gives results of experimental study. 1000 w. Elect'n, Lond—May 23, 1913. No. 42743 A. Electrical Contact Resistance. F. W.

Harris. A summary of investigations and results. 2500 w. Elec Jour-July, 1913. No. 43805.

Resistance Coils

Resistance Coils for Alternating Current Work. H. L. Curtis and F. W. Gives a theoretical discussion Grover. showing the conditions which must be fulfilled in order that the phase angle shall be small and the change of resistance with frequency negligible. Gives applications, measurements, comparisons and suggestions. 6000 w. Bul Bureau of Stand—Nov. 1, 1912. No. 38664 N. See also Inductance, under *Measure*-

ment.

Resonance

Resonance in Wireless Telegraphy. W. H. Eccles. A comparison between spark systems and continuous wave systems. Elect'n, Lond-Jan. 10, 1913. 1600 w.

No. 39249 A.
Excess Voltage Due to Resonance (Overspanning door resonnantie). P. M. Verhoeckx. Theoretical discussion. Serial. 1st part. 5500 w. De Ingenieur— Feb. 8, 1913. No. 40579 D.

See also Pseudo-Resonance, under Electro-Physics.

Solutions

The Electrical Conductivity and Fluidity of Strong Solutions. W. S. Tucker. Abstract of a paper read before the Phys. Soc. Report of experimental investiga-tions. 1500 w. Elect'n, Lond—April 5, 1913. No. 41226 A.

Spark Gaps.

The Sphere Spark Gap. S. W. Farnsworth and C. L. Fortesque. Discusses the limitations of the present needle point

spark gap and proposes the use of a spark gap having two equal spheres. Ills. 1000 w. Pro Am Inst of Elec Engrs—Feb.,

1913. No. 40188 F.
The Maximum Voltage Gradient in a Spark Gap in Terms of the Radius of Curvature of the Electrodes. George R. Dean. Evolves a simple working formula, and shows that the spherical form of electrode may be departed from considerably provided that the curvature of the spark point is known. 800 w. Gen Elec Rev-March, 1913. No. 40244 C.

The Sphere Spark Gap. S. W. Farnsworth. Its advantages over the needle gap are discussed. Ills. 700 w. Elec Jour—May, 1913. No. 42436. Effect of Dielectric Spark-Lag on Spark Gaps. J. P. Minton. Gives re-

sults of an experimental investigation of both needle and sphere-gaps, showing the latter is the more reliable. 2500 w. Gen Elec Rev—July, 1913. No. 43328 C.

Spark Voltage
Recent Experiments on the Limits of
Sparking Voltages (Nouvelles expériences
sur les limiteurs de tension à étincelles).
Andre Léauté. Tabulated results of a series of experiments. Ills. 3500 w. Bull Soc Int des Electriciens-July, 1913. No. 45304 F.

Temperature Rise

Some Fundamental Considerations on Temperature Rise in Electrical Machinery. C. J. Fechheimer. Gives some of the factors affecting temperature rise. 2500 w. Sib Jour of Engng—Dec., 1912. No. 38654 C.

Thermocouples

Note on Cold-Junction Corrections for Thermocouples. Paul D. Foote. siders the method of correction for coldjunction temperatures. 2500 w. Bureau of Stand., No. 202-April 15, 1913. No. 44736 N.

Note on Cold-Junction Corrections for Thermocouples. Paul D. Foote. Gives method of correction for cold-junction temperatures, and methods proposed for the elimination of cold junction correc-tion. 3000 w. Met & Chem Engag— June, 1913. No. 42607 C.

Some Observations on Base Metal Thermocouples. O. L. Kowalke. Read before the Am. Elec-Chem. Soc. Report of an investigation to determine how electromotive forces of couples varied with the temperature. 2800 w. Chem Engr-Sept., 1913. No. 45591 C.

Thermopiles

Note on the Construction of Thermopiles for Monochromatic Illuminators.

Trausients

GENERATING STATIONS

Accumulators

W. W. Coblentz. Describes the bismuth-silver thermopile, with a completely opaque receiver, and reports tests made to determine the relative sensitivity of bismuth-iron and bismuth-silver thermo-2000 w. Jour Fr Inst - May. piles. 1913. No. 42267 D.

Transients

Elements of Electric Transients. G. Faccioli. A simple exposition of the subject. 2500 w. Gen Elec Rev—June, 1918. No. 42594 C.

Voltage

Wave-Form Hypotheses in Excess Voltage Calculations (Wellenformhypothesen in Ueberspsannungsrechnungen). P. M. Verhoeckx. A mathematical study of electromagnetic waves. Diagrams. Serial. 1st part. 4000 w. Elek u Masch—Oct. 5, 1913. No. 46083 D.

Waves

The Course of Electrical Waves in Conductors with Variable Space Characteristics (Der Verlauf elektrischer Wellen auf Leitungen mit räumlich veränderlicher Charakteristik). Reinhold Rüdenberg. A study of the wave action theoretically occurring in wires and cables.

Diagrams. 7000 w. Elek u Masch—May 18, 1913. No. 43040 D.

Wave Shapes

A Proposed Wave Shape Standard. Cassius M. Davis. States objections to the present wave-shape standard, and proposes a standard making use of the change of effective reactions of a condenser with change of wave shape. Ills. 1500 w. Pro Am Inst of Elec Engrs— Feb., 1913. No. 40182 F. Wave Form Distortions and Their Ef-

fects on Electrical Apparatus. P. M. Lincoln. Considers deviation of the wave shape from the line form and the effect on the current wave form in connection with various kinds of circuits. 3000 w. Pro Am Inst of Elec Engrs-Feb., 1913.

No. 40194 F.

Potential Waves of Alternating-Current Generators. W. J. Foster. Aims to discuss certain elements in design that affect the character of the potential wave; to show the effect of load and operating conditions, on the no-load wave; and to give illustrations of waves, good, bad and indifferent. 2000 w. Pro Am Inst of Elec Engrs-Feb., 1913. No. 40180 F.

GENERATING STATIONS

Accidents

See same heading, under Miscellany.

Accumulators

The Use of Storage Batteries in Modern Electrical Engineering. D. Basch. Discusses good practice in the installation, operation, and maintenance of storage batteries. The present number considers lead batteries. 5500 w. Gen Elec Rev—Nov., 1912. Serial. 1st part. No. 37216 C.

The Storage Battery. John A. Randolph. An explanation of storage battery reactions, the capacity, voltage, construc-tion and installation. Ills. 1500 w. Power-Jan. 14, 1913. Serial. 1st part.

No. 39121.

Winter Care of Storage Batteries. E. Wilkes. Information in regard to their proper treatment. 1400 w. Can Elec News—Jan. 1, 1913. No. 38795 C. The Edison Storage Battery. Harold H.

Smith. Illustrations, description of construction, characteristics and tests, uses, etc. General discussion of this paper and Mr. Woodbridge's paper. 8000 w. Jour W Soc of Engrs — Jan., 1913. No.

Some Economical Applications of the Storage Battery. J. Lester Woodbridge. Outlines the general principles and gives concrete cases to illustrate applications. Ills. 4000 w. Jour W Soc of Engrs— Jan., 1913. No. 39957 D.

Some Features of the Edison Storage Battery. L. L. Thurstone. Describes the fundamental characteristics of the battery, including the chemical reactions, its mechanical construction and some of its operating features. Ills. 2500 w. Sib Jour of Engng—Feb., 1913. No. 40400 C.

Recent Improvements in the Storage Battery. Explains types of storage cells, and improvements introduced. Ills. 2000 w. Sci Am—March 15, 1913. No. 40448.

The Regeneration of Sulphated Storage Cells. C. W. Bennett and D. S. Cole. Abstract of paper read before the Am. Elec. Chem. Soc. Reports results of experiments which show that badly sulphated cells can be economically regenerated by electrolysis in sodium sulphate solution. 1500 w. Elect'n, Lond—March 28,1913. No. 41133 A.

Installation and Care of Storage Batteries. H. M. Nichols. Considers the layout and installation of storage batteries, and their operation and maintenance. 2200 w. Power—July 15, 1913. Serial. 1st part. No. 43699.

The Edison Storage Battery. Harold H. Smith. Describes its construction. electrical characteristics and tests. General discussion. Ills. 5500 w.

Central Stations

Cleveland Engng Soc-July, 1913. No. 44040 D.

See Batteries, under MECHANICAL EN-GINEERING, Automobiles; also Accumulator Traction, under RAILWAY ENGINEER-ING, Motive Power and Equipment.

Alabama

Development of Alabama Water Powers. Illustrates and describes the system of the Alabama Traction Light and Power Co., Ltd., of Birmingham. 2500 w. Elec Wld—Sept. 13, 1913. No. 45115.

Auxiliary Stations

Notes on Auxiliary Stations for Hydro-Electric Plants. R. C. Muir. Reviews features having an influence on the reliability and economy of the develop-ment. 2200 w. Gen Elec Rev — June, 1913. No. 42585 C.

Batteries

The Use of a Large Lighting Battery in Connection with Central Station Supply. F. H. Whysall. Abstract of a paper read before the Inst. of Elec. Engrs. Brief description of the battery at the Dickinson St. station, Manchester, discussing the regulating cells and boosters, comparing costs, etc. 4000 w. Electr'n, Lond—Jan. 24, 1913. No. 39774 A.

A Test of an Edison Primary Battery (Edison Lalande Cell). Dudley Sanford. Report of test and results. 1200 w. Met & Chem Engng — March, 1913. 40329 C.

Central Stations

New Power Station and Line Construction in Lexington. Illustrated description of a recently completed plant for supplying power, light, transporta-tion and ice. 3000 w. Elec Ry Jour-Nov. 16, 1912. No. 37608.

South Norwalk Electric Works. Gives the history, equipment, and operating and business methods of a very successful municipal electric plant. Ills. 3300 w. Munic Jour—Nov. 7, 1912. No. 37324.

Central-Station Practice at Halifax, N. Illustrated description of the construction and operation of the construction and operation of a station supplying energy for railway, lighting and industrial service. 3000 w. Elec Wld—Nov. 23, 1912. No. 37770.

The Business Side of Central Station Work. Wills Maclachlan. Aims to show some of the objects of the office work. 4000 w. Ap Sci—Nov., 1912. No. 38283 C.

Opportunities in the Commercial Side of the Central Station Business. Henry Holton Scott. Shows the possibilities for men who are prepared to take the lead in this field. 2500 w. Wis Engr—Nov., 1912. No. 38564 C.

The Commercial Development of Elec-

tricity Supply. Discusses the development in England, the need of organization, the qualifications of the commercial engineer. 3000 w. Elec Rev, Lond-Nov. 22, 1912. Serial. 1st part. No. 38020 A

Power Stations and Sub-Stations for A. C. Railways (Kraft- und Unterwerke für Wechselstrombahnen). Herr Idelberger. Details plans of some existing stations. Ills. 2800 w. Elek Kraft u Bahnen—Nov. 14, 1912. No. 38471 D.

New Perth Amboy Central Station. Warren O. Rogers. Illustrates and describes interesting features, including the method employed in cutting in and out turbines and exciters by illuminated sig-1500 w. Power-Jan. 14, 1913. No. 39119.

The New Plants of the Compagnie Parisienne de Distribution d'Électricité (Les Nouvelles usines de la Compagnie Parisienne de Distribution d'Électricité). Describes layout of plant. Plate. w. Tech Mod—Jan. 1, 1913. No. 39073 D.

Gas-Engine-Driven Central Station. Illustrated description of the station at Titusville, Pennsylvania, and its equipment and work. 2000 w. Elec Wld-

The Use of a Large Lighting Battery in Connection with Central Station Supply. F. H. Whysall. Based on results obtained over two complete years' working of the 12000 ampere-hour battery installed at the Manchester Elec. Works,

Dickinson St. 5000 w. Inst of Elec Engrs—March, 1913. No. 40390 N. Turbines and Diesel Engines in Cen-tral Stations. M. Yercke. Abstract translation from the German. Gives a comparison of their relative economic importance for central-station work. 2200 w. Power—March 4, 1913. No. 40300.

The Southwest Station of the Compagnie Parisienne de Distribution d'Electricite (L'Usine Sud-Ouest de la Compagnie Parisienne de Distribution d'Electricite). The turbines and electrical machinery installed at the plant. Ills. 4000 w. Tech Mod—Mar. 15, 1918. No. 40605 D.

Central Station Practice at Cambridge, Mass. Gives the history of the plant, describing the construction of the present plant, its equipment, the installation and testing of the 625-kw. turbine, etc. Ills. 4500 w. Elec Wid—April 19, 1913.

Serial. 1st part. No. 41368.

The Northwest Station of the Commonwealth Edison Company, Chicago. W. L. Abbott. Explains factors influencing the selection of the site, and illus-

Central Stations.

GENERATING STATIONS

Combination Stations

trates and describes the equipment of the station. Discussion. 7500 w. Jour W Soc of Engrs—Feb., 1913. No. 40409 D. Commonwealth Edison Co.'s New Sta-

tion. Illustrated description of a station in Chicago which will eventually have a capacity of 240000 kw. 2000 w. Power—April 29, 1913. No. 41679.

April 29, 1915. No. 41015.

Analysis of Central-Station Conditions in a Small Town. Shows the possibilities, economies and advantages of combining ice-making and steam heating with an electric plant. Ills. 2500 w. Elec Rev & W Electr'n-Feb. 8, 1913. No. 39745.

(Kleinere The pos-Small Central Stations Ueberlandwerke). C. Reindl. sibilities for small hydroelectric generating plants; their equipment, and descriptions of typical stations. Ills. Serial. 1st part. 2500 w. Zeit f d ges Turbinenwesen - March 10, 1913. 41456 D.

A Two-and-a-Half Billion Dollar Argument for Central Station Service. A. E. On the advantages accruing to manufacturers from the use of central 2500 w. station power. Elec Jour-

June, 1913. No. 43220.

Central Station Commercial Possibili-H. S. Knowlton. Suggestions for the cultivation of the day load of off-peak business. 4000 w. Elec Rev & W Elect'n—May 31, 1913. No. 42654. Central Station Practice at Waterloo,

Iowa. Illustrates and describes the steamplant and sub-station equipment, the distribution system, etc. 2500 w. Elec Wld

-July 26, 1913. No. 43926.

The Generation of Electrical Energy for Smaller Towns. M. M. Inglis. Gives data concerning consumption of light and power, and features governing plant design and equipment. 2500 w. Can Engr—July 10, 1913. No. 43682.

Savannah Electric Co.'s New Power Warren O. Rogers. Illustrated description of this new, 11000-kw. capacity, steam turbine central station. Power-July 29, 1913. No. 43946.

Sectionalizing Devices for Central Stations. F. Heppenstall. Presents the advantages of sectionalizing and gives diagrams showing the system as applied to three-phase current. 1500 w. Elect'n, Lond—June 20, 1913. Serial. 1st part. No. 43375 A.

The Causes of Fires in Central Stations and Their Remedy. Andre Gerard, in La Lumière Electrique. Calls attention to sources of danger recently introduced and gives preventive suggestions. 1500 w. Elec Rev & W Elect'n—Aug. 23, 1913. No. 44559.

Central Station Development at Hart-

ford. Reports the inauguration of an electric-truck battery interchange system on mileage basis, codification of electric rate schedules, and development of industrial electric heating. Ills. 3000 w. Elec Wld—Sept. 6, 1913. No. 45010.

Springfield Electric-Light Plant. Warren O. Rogers. Contains turbine units in both the old and new sections, vertical porcupine boilers supplying them with steam. Ills. 2000 w. Power—Sept. 2, 1913. No. 44900.

Importance of a Good Distributing System for a Central Station. M. D. Cooper. Considers losses due to voltage drop, and the effect on the various ap-Wis Engr-Oct. 1200 w. pliances. 1913. No. 46310 C.

The Central Station in the Small Town. H. L. Titus. Read at convention, Glenwood Springs, Colo. Suggestions for increasing the power load. 3000 w. Elec Rev & W Elect'n. — Oct. 11, 1913. No. 45794.

See also Cost, under Generating Stations, and Instrument Testing, under Measurement.

Chicago

The Commonwealth Edison Company. Gives the history of the development of the Chicago central station. Ills. 5500 w. Elec Rev & W Elect'n-May 31, 1913. No. 42653.

Electric Service in Chicago. A survey of what has been accomplished in the manufacture, distribution and sale of electricity. Ills. 5000 w. Elec Wld—May 31, 1913. No. 42648.

Electric Service in Chicago Suburbs. An illustrated account of the high system load-factors and operating economies achieved through the diversified demands of customers. 7500 w. Elec Wld-June 7. 1913. No. 42728.

Combination Plant

Central-Station Ice-Making. that the two plants can be run on a more economical basis than would be possible with either plant running singly. Ills. 3500 w. Elec Rev & W Elect'n-Jan. 4, 1913. No. 38815.

Combination Railway, Electric and Ice-Making Plant. A. R. Smith. Illustrated description of a reconstructed station at Hampton, Va. 2500 w. Elec Wld—Aug. 23, 1913. No. 44561.

Combination Stations

The Simultaneous Production of Electric Energy and Heat (Production simultané d'énergie électrique et de chaleur). M. A. Beaurrienne. Different machine combinations for the production of motive power and heat. Ils. 15000 w. Mem

Hvdro-Electric

Soc Ing Civ de France—Nov., 1912. No. 40074 Ğ.

Cooling Plant

Notes on Cooling Generating Plant. W. Bolton Shaw. Considers types of generating plant practical for an electrical installation. 4500 w. Ir & Coal Trds Rev—May 9, 1913. No. 42298 A. Cooling Water

Supply of Cooling Water for Power Stations. Fred Buch. Considers highhead developments, low-head developments, de-aerating or storage tanks, and ponds and reservoirs. 2000 w. Wld-May 3, 1913. No. 41884.

Costs

Cost of Power in Central Stations. Henry D. Jackson. Shows the initial cost per kilowatt and the cost of producing a kilowatt-hour. 3000 w. Power-Nov. 12, 1912. No. 37373.

Standardization of Method for Determining and Comparing Power Costs in Steam Plants. H. G. Stott and W. S. Gorsuch. Considers the fundamental basis should be per kw.-hour net output. Discusses methods. 9000 w. Pro Am Inst of Elec Engrs—May, 1913. No. the fundamental 48454 F.

The Cost of Manufacturing Electricity. H. M. Hobart. Considers the production costs, investment costs, administration costs, influence of load-factor, and of power-factor, and gives a bibliography. 5000 w. Gen Elec Rev—Sept., 1913. No.

44829 C

The Determination of Operating Costs of Power Installations. C. A. Fees. Read before the Kansas Gas, Water, Elec. Light, and St. Ry. Assn. Gives some of the methods of determining the costs. 2200 w. Elec Rev & W Elect'n-Oct. 18, 1913. No. 45958.

Relation of Plant Size to Power Cost. P. M. Lincoln. Gives reasons why a central station plant can take care of a given service more economically than a small plant. 4000 w. Pro Am Inst of Elec Engrs—Oct., 1913. No. 46340 F.

Dover, Eng.

Electricity Supply in Dover. An account of the central station and its working. 1200 w. Elec Rev, Lond-Aug. 29, 1913. Serial, 1st part. No. 45027 A.

Draft Tubes

Method for Designing Concrete Draft Tubes. Gives a method derived by Herr R. Dubs, and published in La Houille Blanche. 700 w. Eng Rec—Aug. 9, 1913. No. 44243.

Engines

See Gas Engines, under MECHANICAL Engineering. Combustion Motors.

Equipment

Electrical Features Power House No.

Tennessee Power Co., Parksville, Tenn. Illustrated detailed description of this development. 6000 w. Elec Engng -April, 1913. No. 41326.

Extensions

The "1912 Extension" to Fisk Street Station. Illustrated description of very large turbo-generators and details of power house design in Chicago. 3000 w. Elec Wld—Oct. 18, 1913. No. 45960.

Floods

Restoring Submerged Electrical Apparatus to Service After Flood. George H. Morse. Illustrated description of methods used by the writer at Wheeling, W. Va. 1000 w. Elec Wld—April 19, 1913. No. 41370.

Hydro-Electric

The Cornell University Hydro-Electric Power Plant. George S. Macomber. Il-lustrated description. 1200 w. Sib Jour of Engng—Nov., 1912. No. 37537 C. A 120,000 Kw. Hydro-Electric Power

Development With 4,390-Ft. Head. Illustrated description of the plant at Big Creek Falls, California, developing this amount of power. 2200 w. Eng News-Nov. 7, 1912. No. 37312.

Carp River Hydro-Electric Development. Illustrated description of an 8,000h. p. hydro-electric plant to furnish power for adjacent mines and mill plants in Michigan. 1800 w. Eng Rec—Nov. 23, 1912. No. 37757.

23, 1912. No. 37757.

Hydro-Electric Developments on the Presumpscot River. Henry W. Foster. Notes from a paper read before the Maine Soc. of Civ. Engrs., describing developments along this river and the discharge of the stream. 2000 w. Eng Rec-Nov. 2, 1912. No. 37221.

Hydro-Electric System of Appalachian Power Company. L. S. Gresham. Illustrates and describes details of plants No. 2 and 4 and the transmission sys-2500 w So Elect'n-Nov., 1912. tem. No. 37656.

Wachusett Dam Hydro-Electric Plant. Warren O. Rogers. Illustrates and describes details of this plant at Clinton, 1000 w. Power-Nov. 26, 1912. Mass. No. 37782.

The Arniberg Electric Plant at Amsteg (Das Elektrizitätswerk Arniberg bei Amsteg). Topographic maps and general plans of reservoir, pipe line, and power house of this plant in Switzerland. Ills. Serial. 1st part. 2000 w. Schweiz Bau-Oct. 5, 1912. No. 37433 D.

The Generation and Transmission of Hydroelectric Power. E. A. Lof. This first of a series of six articles presents the selection and arrangement of the various apparatus comprising a complete

Hydro-Electric

equipment. Ills. 6200 w. Engineer Magazine—Jan., 1913. No. 38688 B. Engineering

The Generation and Transmission of Hydroelectric Power. E. A. Lof. second article of a series considers transformers and switching equipment. Ills. 6500 w. Engineering Magazine—Feb., 6500 w. 1913. No. No. 39426 B.

The Generation and Transmission of Hydroelectric Power. E. A. Lof. This third article of a series considers cabling. wiring and line construction. Ills. 2000 w. Engineering Magazine—March, 1913. No. 40086 B.

The Generation and Transmission of Hydroelectric Power. E. A. Lof. This fourth article of a series discusses insulators, line crossings and sub-station apparatus. Ills. 5000 w. Engineering Magazine—April, 1913. No. 40910 B.

The Commercial Side of a Small Hydroelectric Property. Explains conditions and methods pursued. 2000 w. Elec Rev & W Elect'n-March 8, 1913. No. 40378.

The Generation and Transmission of Hydroelectric Power. E. A. Lof. Fifth article of a series dealing with frequency changers and synchronous converters. Ills. 6000 w. Engineering Magazine— May, 1913. No. 41630 B.

The Generation and Transmission of Hydroelectric Power. E. A. Lof. Sixth article of a series covering synchronous condensers, boosters, and indoor switching equipment. Ills. 4500 w. Engineering Magazine—May, 1913. No. 42490 B.

The Generation and Transmission of Hydroelectric Power. E. A. Lof. Sev-

enth and last article of a series. Discusses the commercial opportunities for the utilization of water power. 8000 w. Engineering Magazine—July, 1913. No. 43095 B.

Generators for Hydroelectric Power Stations. Eric A. Lof. Shows how the number, speed and capacity of generating units are affected by hydraulic conditions and by the economical rating of water wheels. 4500 w. Gen Elec Rev.—June, 1913. No. 42587 C.

World's Largest Water-Power Plant. Illustrated description of the development at Keokuk, Iowa, interesting for its size and numerous features of hydraulic and electrical construction. 7000 w. Elec Wld-May 31, 1913. No. 42650.

Two Hundred Thousand Horse Power. Illustrated description of the great engineering works at Keokuk, Iowa, utilizing the waters of the Mississippi. 4000 w. Cassier's—July, 1913. No. 43349.

Power from the Mississippi River. Il-

lustrated description of the development at Keokuk, Iowa, and its construction. 4000 w. Power—Aug. 5, 1913. No. 44152.

Opening of the World's Greatest Power Plant. Brief illustrated description of the Keokuk dam and power house

tion of the Keokuk dam and power house for generating 300,000 h. p. by the Mississippi River. 1700 w. Sci Am—Sept. 13, 1913. No. 45063.

Three Hundred Thousand Horse-power Hydroelectric Plant at Keokuk, on the Mississippi (Usine hydro-electrique, de 300,000 chevaux, de Keokuk, sur le Mississippi). P. Calfas. Brief general description of the plant. Ills. 2000 w. Genie Civil—July 26, 1913. No. 45342 D. Hydroelectric Energy for Coal Fields. Illustrated description of the system of

Illustrated description of the system of the Appalachian Power Co., on the New River in Virginia. Also editorial. 2800 w. Elec Wld—Nov. 30, 1912. No. 37948. Hydro-Electric Power in the Butte-An-

aconda District. Warren Aikens. Illustrates and describes the system which supplies electric current to the mines, and smelters. 4000 w. Min & Wld—Nov. 30, 1912. No. 37954. A Unique Utah Water Power. Min & Engng

trated description of the new Riverdale plant, utilizing an irrigation canal. 2000 w. Elec Wld—Dec. 7, 1912. No. 38096. Riverdale Hydroelectric Plant. Illus-

trated description of a plant in Utah having automatically controlled relief valves and water saving devices at the and of long penstocks in place of the usual surge tank and standpipe. 2000 w. Eng Rec—Dec. 14, 1912. No. 38195. New Norwegian Hydroelectric Project.

Illustrated description of the develop-ment of the water-power of the Samnan-ger watershed for the City of Bergen. Also editorial. 2700 w. Elec Wld—Dec.

14, 1912. No. 38212. The Hydro-Electric Plant of the Sherbrooke Railway and Power Company at Sherbrooke, P. Q. Abstracts from a paper by C. L. Cate describing the design and construction of the plant.

Can Engr—Dec. 5, 1912. No. 38087.
The Vancouver Island Power Company, Limited, Jordan River Development. Illustrated description of the development, the Bear Creek dam and reservoir, the intake tower, etc. A plant constructed under difficulties. 5000 w. Can Engr-Nov. 28, 1912. Serial. 1st part. 37928.

Bull Run Hydroelectric Plant. Illustrated description of a Hickok. p. development near Portland, 25,000-h. Ore. 1500 w. Eng Rec-Jan. 18, 1913. No. 39190.

GENERATING STATIONS.

Hydroelectric

Hydroelectric Plant at Trollhättan, Sweden. Illustrated detailed description of the 100,000-h. p. generating station built by the Swedish government for supplying energy at low rates. 3000 w. Elec Wld—Jan. 11, 1913. No. 38996.

The World's Largest Hydro-Electric Development at Keokuk, Iowa. J. H. Alexander. Illustrated description of the dam, power house and turbines, switching arrangements, station auxiliaries, &c. 3000 w. So Elect'n—Jan., 1913. No. 39212.

Hydroelectric Development Replacing Old Power Canal System. A short cut-off around the Great Falls of the Passaic River in Paterson, N. J., makes 6500 h.p. available. Illustrates and describes details of the development. 2000 w. Eng Rec—Feb. 22, 1913. No. 40100.

Power Developments on the Deerfield River, Massachusetts. Map and illustrated description of the complete utilization of the power possibilities by storage reservoirs and interconnected power stations. 3500 w. Eng Rec—Feb. 1, 1913. Serial, 1st part. No. 39644.

Waterbury and Bull's Bridge Plants. Warren O. Rogers. The Waterbury plant consists of four steam turbine units and a large transformer station. The Bull's Bridge plant contains six 1000-kw. hydroelectric turbo-generators. Ills. 1500 w. Power—Feb. 11, 1913. No. 39756.

The Hydro-Electric Developments of the Great Western Power Company. R. B. Mateer. Map and illustrated description of developments in California. 2000 w. So Electr'n—Feb., 1913. No. 39875.

200,000 Horse Power Hydroelectric Power Plant at Keokuk, Iowa, and Hamilton, Ill. H. M. Nelson. Illustrates and describes a plant under construction on the Mississippi River at the foot of the Des Moines Rapids. 3500 w. Cornell Civ Engr.—Feb., 1913. No. 40090 C.

The Town of Magog, Municipal Hydro-Electric Development. A. C. Doherty. Illustrated description of a development in Quebec. 1200 w. Can Engr—Feb. 13, 1913. No. 39826.

The "Motor" Company's Water Power Plant at Biaschina and Ticinetto, Baden, Switzerland. (Die Wasserkraftanlagen Biaschina und Ticinetto der A.-G. "Motor," Baden, Schweiz). Maps, description and illustrations of this 38,000 horsepower plant. Serial, 1st part. 1600 w. Zeit f d ges Turbinenwesen — Jan. 10, 1913. No. 40054 D.

Power Plant of the Victoria Falls and Transvaal Power Co. in South Africa (Die Anlagen der Victoria Falls and Transvaal Co. in Südafrika). S. Klingenberg. Details of the layout of this 40,000-volt station. Ills. Serial, 1st part. 5,000 w. Zeitschr des Ver deutscher Ing

5,000 w. Zeitschr des Ver deutscher Ing

Jan. 4, 1913. No. 40035 D.

Pumping Water to Increase the Supply for a Hydroelectric Plant. M. B.

Lott. Illustrated description of the Mill Creek pumping station, near Salt Lake City, Utah, which augments a high head flow by a comparatively low lift. 2500 w. Eng Rec—March 15, 1913. No. 40643.

Appalachian Hydro-Electric Development Warren O Rogers Illustrated

Appalachian Hydro-Electric Development. Warren O. Rogers. Illustrated description of an installation consisting of five power-plants on the New River, Va. 1500 w. Power—March 25. 1913. No. 40795.

Mount Hood Hydroelectric Developments. W. P. Brereton and R. H. Mulock. Illustrates and describes the hydraulic features of a system for generating 60000 h.p. from glacial streams and transmiting it to Portland, Ore. 2500 w. Elect Wld—March 22, 1913. Serial. 1st part. No. 40778.

The Arniberg Hydro-Electric Power Station. Illustrated detailed description. 2500 w. Engr, Lond—Feb. 28, 1913. No. 40492 A.

The Sainnanger Hydroelectric Plant. Illustrated description of a high-head development built by the City of Bergen, Norway. 2500 w. Eng Rec.—March 22, 1913. No. 40768.

The Hydroelectric Plant at Biaschina, Switzerland (L'usine hydro-électrique de la Biaschina, Tessin, Suisse). Ch. Dantin. Brief description of building and installations. Ills. and plate. 1600 w. Genie Civil — March 15, 1913. No. 40600 D.

A 300,000-Horsepower Hydroelectric Plant in the United States (Une usine hydro-electrique d'une puissance de 300,000 chevaux aux Etats-Unis). Richard Muller. Description of the generating station at Keokuk, Iowa. Ills. 2400 w. Tech Mod—Mar. 15, 1913. No. 40604 D. Water Power. W. G. Swendsen. Brief

Water Power. W. G. Swendsen. Brief discussion of the hydroelectric development. 1800 w. Jour of Idaho Soc of Engrs—June, 1912. No. 41729 N. Hydro-Electric Power-Plant in San

Hydro-Electric Power-Plant in San Juan, Argentina. Illustrations with brief description of the difficulties of transport and erection of the plant. 1200 w. Engng — March 21, 1913. No. 41018 A.

Swiss Hydroelectric Developments. Data on water-power developments, with comparison of steam and gas-electric plants and transmission systems. Ills. 2500 w. Elec Wld—April 12, 1913. No. 41190.

GENERATING STATIONS

Hydroelectric

Hydroelectric Developments. Illustrates and describes some of the

more important plants. 4000 w. Eng Rec—April 26, 1913. No. 41542. The Developments in Water Power Machinery and Water Power Plants (Die Entwicklung der Wasserkraftmaschinen und Wasserkraftanlagen). A. Budau. Hydroelectric power production and ma-chinery in the past 30 years. 5600 w. Elek u Masch (Special)—March 1913. No. 41484 D.

The Value of the Pangani Falls for Supplying Electric Energy to Northern German East Africa (Die Nutzbarmachung der Panganifälle für die Versorg-ung des Nordens von Deutschostafrika mit elektrischer Energie). Herr Domnick. An outline of the power available

from this source. Maps. 3000 w. Glaser's Ann—Mar. 15, 1913. No. 41453 D.
The Use of Water Power on the Upper Sources of the Weser (Die Ausnutzung der Wasserkräfte im oberen Quellgebiete der Weser). Herr Bartel. study of available supplies, present development, and topographic features. Ills. and Map. 5000 w. Elek Kraft u Bahnen—Apr. 4, 1913. No. 41502 D. Hydroelectric Development and Hoist System of Cleveland-Cliffs Iron Co. Il-

lustrated description of a recently completed 8000 h. p. station near Marquette, Mich. 2000 w. Elec Engng—May, 1913. No. 41950.

Hydroelectric Developments at Niagara Falls. Albert F. Ganz. Describes the present power plants. Map. 4000 w. Stevens Ind—April, 1913. No. 42415 D. The Hydro-Electric Development of

the Braden Copper Co. C. G. Newton. Illustrated description of a development on the Cachapoal River, Chile. 2000 w. Eng News—May 22, 1913. No. 42348. Hydroelectric Plant for Sawmill Use at Hartland, Vt. M. A. Hicks. Illus-

trated description of an interesting plant, located in a V-shaped gorge. 2000 w. Elec Wld—May 17, 1913. No. 42227.

Hydro-Electric Possibilities of the Maitland River, Ontario. Report by H. G. Acres, giving data regarding the hydrology of the stream, with an analysis of the possibilties of its commercial development. 3000 w. Can Engr-May 8, 1913. No. 41970.

McCalls Ferry Hydro-Electric Plant. Charles H. Bromley. Brief illustrated description of the construction and equip-ment of this plant on the Susquehanna River. 4000 w. Power—May 13, 1919. No. 42016.

Method of Constructing a Hydroelectric Power House and Dam on Sand Foundations. An account of interesting work near Prairie du Sac, Wis. 2500 w. Engng & Con-May 7, 1918. No. 41910.

Mockfjärd Hydroelectric Development. Illustrated description of a power plant in Sweden where the turbines have been placed at the bottom of cylindrical shafts. 2000 w. Eng Rec-May 10, 1913. No.

Municipal Power Plant of Eugene, Ore. Illustrated description of a hydroelectric generating station, transmission and distribution systems on the McKenzie River, supplying energy to a munici-pality of about 12,000 inhabitants. Costs are given. 2000 w. Elec Wld— May 17, 1918. No. 42226.

Subterranean Swedish Generating Plant. Illustrated description of the hydraulic-electric generating and transmission equipment of the Vesterdalalfoen Power Co. at Mackfjärd, part of a 65000-h. p. interconnected system. 2200 w Elec Wld—May 10, 1913. No. 41964.

Twin Falls Hydroelectric Development. George C. Newton. Plan and illustrated description of the construction of a power plant on the Menominee River between Michigan and Wisconsin. 6500 w. Eng Rec—May 24, 1913. Serial. 1st part. No. 42377.

The Projected Sauer River Dam in the Grand Duchy of Luxemburg (Ueber das Projekt der Sauertalsperre im Grossherzogtum Luxemburg). J. P. Manter-nach. A review of the electric power possibilities, and the present scheme of the Transport Development and Power Syndicate, Ltd. 4800 w. Elek Kraft u Bahnen—April 24, 1913. No. 42157 D.

A Review of Recent Progress in the Engineering of Hydroelectric Power Plants and Transmission Systems. David

B. Rushmore. Ills. 2500 w. Gen Elec Rev—June, 1913. No. 42580 C. Construction Work on the Prairie du Sac Power Plant. Illustrated description of the cofferdam and contractor's equipment for building dam and power house of a large hydroelectric installation. 2500 w. Eng Rec—May 31, 1913. No. 42644.

Hydro-Electric Plant at Worcester. Illustrated description of the 450-B.H.P. water-turbine at the Powick power-sta-1500 w. Engng-May 23, 1913. No. 42776 A.

Hydro-Electric Power at Mason Valley, Nev. Warren Aikens. Illustrates and describes the Truckee River General Electric Co. power plant at Reno, Nev. 3500 w. Min & Engng Wld—June 7, 3500 w. 1913. No. 42721.

Klamath River Hydroelectric Development. J. C. Boyle. Brief illustrated

description of a new 53000-hp. plant for the California-Oregon Power Co. 2500 w. Eng Rec—June 7, 1913. No. 42714.

Pressure Regulation for Hydroelectric Plants. C. A. Tupper. Considers some of the problems involved in regulating the speed of hydroelectric units, with special reference to types receiving the water supply from enclosed flumes or pipe lines. Ills. 2200 w. Min & Engng Wld—June 21, 1913. No. 43115.

The Generating System of the Columbus Power Co., Columbia, Ga. D. H. Braymer. Illustrated description of the Goat Rock hydroelectric development and 3000 w. transmission system. Engng-June, 1913. No. 42724.

Hydro-Electric Development and Water Conservation. Morris Knowles. Revised from an address before the Am. Inst. of Elec. Engrs., Feb. 8, 1913. Discusses what should be done to secure the best utilization of the water resources of the country. 2500 w. Elec Jour-July. 1913. No. 43804.

Hydro-Electric Power for B. C. Mines. Jared Thompson. Brief illustrated description of the plant at Bonnington Falls on the Kootenay river, supplying current to the Rossland-Nelson districts. 1800 w. Min & Engng Wld—July 5, 1913. No. 43447.

A Hydro-Electric Plant to Supply Coal Mines. Illustrated description of a plant which proposes to supply mines in W. Va. distant from 45 to 65 miles from the central station. 2200 w. Coal Age—July 5, 1913. No. 43443. New Hydro-Electric Plant in North-

west. Edward A. West. Illustrated description of the Bull Run development of the Portland Railway, Light & Power Co. with ultimate capacity of 15000 kw. 2000 w. Elec Trac—July, 1913. No. 43810.

Raystown Hydroelectric Plant. Illustrated description of the development and methods of construction. Includes a concrete dam with stepped spillway and hidden fishway. 2000 w. Eng Rec-June 28, 1913. No. 43302.

A 40000-hp Swiss Hydroelectric Plant. Illustrates and describes a development at Biaschina, in southern Switzerland, utilizing 870 ft. head of Tessin River to furnish energy for nearby electrochemical industries. 1800 w. Elec Wld—July 12, 1913. No. 43678.

The Hydro-Electric Rules and Regulations and the National Electric Code. H. F. Strickland. Brief outline of the rules and their aims. 2400 w. Can Elec Assn—June, 1913. No. 44814 N. Hale's Bar Development of the Chat-

tanooga and Tennessee River Power Co.

B. T. Burt. Illustrated description of one of the largest water power develop-ments in Tennessee. 3000 w. Elec Engag Aug., 1913. No. 44291.

Hydro-Electric Development in California. John A. Britton. Illustrated general survey of the present situation. 5000 w. Sci Am Sup—Aug. 2, 1913. No. 44075.

Hydro-Electric Development in Montana. Max Hebgen. Explains the natural features of the state affecting power development, considers the early and late developments, the capacity, transmission, character of load, &c. Ills. 5000 w. Bul Am Inst of Min Engrs-Aug., 1913. No. 44755 F.

Hydroelectric Plant on White Salmon River. Wilbur B. Foshay. Brief illusrtated description of a system employing

rtated description of a system employing immense wood-stave pipe. 1000 w. Elec Wld—Aug. 9, 1913. No. 44270.

Tacoma's Nisqually River Development. R. H. Richards. The hydraulic features of a 19,000 k. w. municipal plant, utilizing a 500-ft. fall in the glacier-fed Nisqually River, are illustrated and described. 1200 w. Elec Wld—Aug. 2, 1912. No. 44148. 1913. No. 44146.

White River Hydroelectric Plant. Illustrates and describes this first of a series of plants designed to develop the power of this stream in Missouri. 2500 w. Eng Rec—Aug. 2, 1913. No. 44125.

Preliminary Studies for the Development of a 300,000 H. P. Hydro-Electric Plant at the Dalles of the Columbia River. Discussion and data from the technical report on this project. 8500 w. Engng & Con—Sept. 10, 1913. 45061.

Hydro-Electric Development at Dryden, Ont. Illustrated description of a development of 2,000 h. p. capacity, to be used for operating sulphite pulp mills, and for supplying light and power to the town. 1800 w. Con Rec—Sept. 3, 1913. No. 44936.

Large Power System in South Africa. Dr. G. Klingenberg. Abstract translation from Zeit. des Ver. Deut. Ing. Map and description of power distribution systems on the Rand, showing air and electric transmission lines. 2500 w. Power—Sept. 9, 1913. No. 45013.

Puntledge Hydroelectric Power Plant. Illustrated description of an ultimate development of 19,000 horsepower, which will supersede separate steam plants used for the operation of coal mines at Van-couver Island. 3000 w. Eng Rec—Sept. 20, 1913. Serial, 1st part. No. 45266. Novel Features in Flume and Pen-stock Design: The Puntledge River

GENERATING STATIONS

Load Factors

Power Development, Vancouver, B. C. Illustrated description of the impounding and diversion dams, semi-circular flume, head gates, and other features. 5500 w. Eng News-Oct. 23, 1913. No.

Cedar Rapids Hydroelectric Develop-ment. The plant has eighteen 10800 h. p.

ment. The plant has eighteen 10800 h. p. turbines, receiving water from the St. Lawrence River. Ills. 2500 w. Eng Rec—Oct. 25, 1913. No. 46209.

Hydro-Electric Power Development Near Calgary, Alta. W. W. Hay. Illustrated description of a development on the Bow River at Kananaskis Falls. 8000 w. Con Rec—Oct. 1 1913. No. 3000 w. Con Rec-Oct. 1, 1913. No. 45634.

Hydroelectric Energy for Worcester Railway System. Illustrates and describes features of Connecticut River Transmission Co.'s 120000-volt lines and substations. 3000 w. Elec Wld—Oct.

4, 1913. Serial. 1st part. No. 45681. Hydro-Electric Power Plant at Chester. Illustrated detailed description of the plant on the banks of the river Dee for utilizing the water power. 3000 w. Engr., Lond—Oct. 17, 1913. No. 46250 A.

The Chester Hydro-Electric Plant. Illustrated description of the plant in this old English city. 1600 w. Elec Rev, Lond—Oct. 17, 1913. No. 46225 A. White Salmon River Power Development. R. M. Overstreet. Illustrated de-

scription of a medium-head hydroelectric station in the State of Washington, served by a wood-stave-pipe line 13.5 feet in diameter and 5,070 feet long. 2500 w.

The Ruetz Generating Station of the Mittenwald Railway (Das "Ruetz-Elektrizitätswerk" der mittenwalder Bahn)
Carl Reindl. The first instalment presents a general description of the aqueduct line to the power house. Ills. Serial. 1st part. 1400 w. Zeit d ges Turbinenwesen — Sept. 10, 1913. No. 46068 D.

See also Water Wheels, under ME-CHANICAL ENGINEERING, Hydraulic Machinery, and Power Plants, under ME-CHANICAL ENGINEERING, Power and Transmission; and Auxiliary Stations. under Electrical Engineering, Generating Stations.

Commercial Development Under Group Control. A report of new lighting and motor business in northwestern Illinois, following consolidation. Ills. 3500 w. Elec Wld—June 7, 1913. No. 42729.

Incandescent Lamps

Rate Systems From the Central-Sta-

tion Solicitor's Viewpoint. J. E. Bullard. Discusses the effect of different types of rate schedule on the consumer and points out some of the methods of explaining rate schedules to prospective customers. 1600 w. Elec Wld-Nov. 16, 1912. No. 37613.

Isolated Plants

Practical Co-Operation Between Central Station and Isolated Plant. Percival-Robert Moses. Advocating joint operation to take care of the peak load_from the Percival. power requirements of each. Diagrams. Engineering Magazine Jan., 5000 ₩. 1913. No. 38682 B.

The New Generating Station at the Britannia Works of Messrs. Dorman, Long

& Company, Ltd. Illustrated detailed description. 3000 w. Ir & Coal Trds Rev—Jan. 3, 1913. No. 39175 A.
Electrical Equipment of a Modern Building. Illustrated description of the isolated 500-kw. generating plant for Æolian Hall, New York. 3000 w. Elec Wld—Feb. 22, 1913. No. 39994.

Isolated Plant of Gasoline Engine Factory. Harry C. Spillman. Illustrates and describes features of an electrical and steam-heating station in Detroit. 2000 w.

Elec Wld—Feb. 15, 1913. No. 39882. The Unit Power Plant for Isolated Buildings and Small Groups. Charles L. Hubbard. First of a series of articles discussing the subject especially from the Build—Feb., 1913. Serial. 1st part. No. 40243 D.

See also Management, under INDUSTRIAL ECONOMY.

Load Curves

Steam and Electric Load Curves in Large Buildings. Gives an interesting collection of curves collected by the committee on heating of the Nat. Elec. Light Assn. 1000 w. Power—July 1, 1913. No. 43322.

Load Equalizers

Flywheel Load Equalizers. Explains the principle and describes typical installations. Ills. 4500 w. Elect'n, Lond—Dec. 13, 1912. (Special.) 38854 D.

Load Factors

Characteristics of Substation Loads at the Anthracite Collieries of the Lackawanna R. R. Co. H. M. Warren and A. S. Biesecker. Deals with a series of tests made on substations which supply power for driving d. c. machinery at the anthracite mines. Discusses the effect of the load factors and peaks on the size and type of apparatus. 1500 w. Pro Am Inst of Elec Engrs—April, 1913. No. 41672 F.

Prime Movere

Loads

Building Up a Day Load for a Small Central Station. William E. Haseltine. Explains how a 24-hour service was successfully established in a community of less than 4000 under most unfavorable 3500 w. Elec Rev & W circumstances. Elect'n—Jan. 25, 1913. No. 39414.

Mining Loads for Central Stations.

Wilfred Sykes and Graham Bright. Discusses the desirabilty of mining loads for central stations from the viewpoints of both the mine operators and central station operators. Also rates. 5500 w. Pro Am. Inst of Elec Engrs-May, 1913. No. 42451 F.

Refrigeration a Desirable Load for Central Stations. Excerpts from report of the Committee on Refrigeration read before the N. E. L. A. 2000 w. Power —June 24, 1913. No. 43124. Unified Public Utilities in Central Illin-

ois. Describes plans of an interconnected system for supplying 25 communities from 700 miles of 33,000-volt transmission lines. Ills. 7500 w. Elec Wld—May 31, 1913. No. 42649.

Electric Supply in London. Frank Bailey. Reviews the development and describes the works, giving information concerning applications, rates, etc. Discussion. 9500 w. Jour Soc of Arts— Frank April 11, 1913. No. 41371 A.

Manchester, Eng.
Recent Developments at Stuart Street Station, Manchester. Illustrates and describes interesting features. 1200 w. Elec Rev, Lond—July 27, 1913. Serial, 1st part. No. 43620 A.

Municipal Station

British Steam Turbo-Generator Stations. History and illustrated description of features of the first municipal electricity supply station established in England. 8500 w. Elec Wld—Nov. 9, 1912. No. 37370.

Operation

Commonwealth Edison System Operating Features. Describes the work of the load dispatcher and the operating system. Ills. 2000 w. Elec Wld—Sept. 27, 1913. No. 45492.

Power-Factor

The Design of Apparatus for Improving the Power-Factor of Alternating-Current Systems. Miles Walker. Discusses the principles involved of a paper read before the Inst. of Elec. Engrs. Ab-Leblanc's phase-advancers are described, and the design of a phase-advancer is considered in detail. 3500 w. Elect'n, Lond—Jan. 10, 1913. No. 39251 A. The Application of Synchronous Mo-

tors to a Water Power Transmission System for the Betterment of Service Standards. Lucius B. Andrus. Outlines the system of the Indiana and Michigan Electric Co. as now operated, explaining conditions. 8800 w. Pro Am Inst of Elec Engrs—March, 1913. No. 40442 F.

Power Houses

The Power House of the Belgard Long-Distance Station (Das Kraftwerk der Ueberlandzentrale Belgard, Akt.-Ges.). H. Scholl. The formulæ used to determine stresses of all kinds in the reinforced structure adopted. Ills. 3600 w. Beton u Eisen-June 12, 1913. No. 43520 E.

Power Plants

Power Plants and Energy Distribution with Special Attention to Overhead Transmission of 150,000 Volts (Grosskraftwerke und Energieverteilung unter besonderer Berücksichtigung der oberen Spannungen b's 150,000 Volt). F. Bartel. The first installment discusses the utility of peat as a fuel in power generation. Ills. Serial. 1st part. 3000 w. Glaser's Ann—Nov. 15, 1912. No. 38431 D.

Developments During 1912 in Power Plant Design. Henry H. Norris. An ac-count of the progress of the year in the field of power generation, including brief descriptions of recent typical power plants. 6000 w. Elec Ry Jour—Jan. 4, 1913. No. 38826.

Jacksonville Municipal Power Plant. C. C. Austin. Illustrated description of a turbine power plant of 6000 kw. capacity. Fuel oil is used in the boiler furnaces. 900 w. Power—May 6, 1913. No. 41889.

New Electric Power House for Stokeon-Trent. Illustrated description of this new plant. 2500 w. Engr, Lond-April 18, 1913. No. 41776 A.

Power Systems

Some Features of the Pacific Light and Power System. B. P. Rowe. Information concerning a system under construction which will operate at a line voltage of 150,000 volts. 1700 w. Elec Jour— Aug., 1913. No. 44595.

Profitable Station in a Town of 3,500 Illustrated description of Inhabitants. the rehabilitation of the system at Walton, N. Y. 2000 w. Elec Wld—Aug. 16, 1913. No. 44415.

Prime Movers

Prime Movers for Electric Power. Dr. S. Z. de Ferranti. Read before the Incor, Munic. Elec. Assn. Brief paper favoring the turbine system, with general discussion. 4800 w. Elect'n, Lond—June 20, 1913. No. 43371 A.

GENERATING STATIONS

Turbine Plant

Rates

Rates

Investigations on Electric Rates (Untersuchungen über Elektrizitätstarife). Carl Richter. Studies on the conditions accompanying the rate question and basic formulae for its determination. Diagrams. Serial. 1st part. 6000 w. Elek u Masch —Oct. 27, 1912. No. 37476 D.

Rates for Electricity. Henry D. Jackson. Considers fit and unfit business for lighting companies to secure and advises extensions along untried lines. 4000 w. Engineering Magazine—Dec., 1912. No.

Critical Tests on the Various Rate and Sale Systems for Electric Energy (Esame critico dei vari sistemi di tariffe di rendita dell' energia elettrica). G. Sartori. The peculiar elements entering into ratemaking and suggestions for modifications. Serial. 1st part. 2000 w. Industria— Feb. 2, 1913. No. 40610 D. The Theoretical Basis of the Multiple-

Rate System. Hugo E. Eisenmenger. A plea for solid rates, and gives an interesting interpretation of rate bills based on solid geometry. Also editorial note. 5000 w. Elec Wld—May 24, 1913. No.

42391.

Rates and Rate Making. John F. Druar. A study of the valuation of a combined electrical and gas property for the purpose of determining the legitimate capital to be figured upon. 5000 w. Jour Assn of Engng Socs-May, 1913. No. 42441 C.

Electricity Supply Charges. Information concerning systems of charging, with curves. 1800 w. Elec Rev, Lond—Aug. 1, 1913. No. 44306 A.

Current Rates in Austrian Electric Plants (Stromtarife in österreichische Elektrizitatswerken). L. Rosenbaum. A comparison of rates with other countries. Table. 2400 w. Elek u Masch—July 6, 1913. No. 44687 D.

See also Costs, under Generating Stations.

Reactance

The Use of Power Limiting Reactances in Large Power Stations. Cassius M. Davis. Shows how to determine the size of coil for given requirements and deals with the factors governing its use. 1800 Gen Elec Rev-June, 1913. No. 42583 C.

Reliability.
The Means for Securing Reliability and Maintaining the Continuity of Supplv. R. D. Spure. Discusses some causes of shut-downs. 2200 w. Elec Rev, Lond—March 14, 1913. No. 40805 A.
Investigation of Prospective Hydroelectric Power Service for Reliabilty. H. S. Knowlton. Considers points involved

in an investigation of service reliability. 2200 w. Eng News-May 22, 1913. No. 42352.

Stations

Electricity Developments in West Hartlepool. Illustrated description of the corporation waste heat generating station. 2000 w. Elec Rev, Lond-Aug. 1, 1913. No. 44305 A

Combination Railway and Lighting System. J. C. Lathrop. Illustrated description of the Gorge power station of the Northern Ohio Traction & Light Co. of Akron, Ohio, located at Cuyahoga Falls. 4000 w. Elec Wld—Aug. 30, 1913.

No. 44878.

Substations

Converting Substations in Basements and Sub-Basements. B. G. Jamieson. Treats principally of methods of over-coming the difficulties attendant upon the installation of synchronous converter and battery substations in basements. Ills. 3500 w. Pro Am Inst of Elec Engrs-July, 1913. No. 43344 F.

The Location of Electric Railway Sub-Stations. G. H. McKelway. Discusses factors to be considered in deciding the question. 3500 w. Engineering Magazine—Aug., 1913. No. 43917 B.

Automatic Substations. H. R. Summer-Describes the automatic substation at Detroit, where a synchronous converter is installed, which is controlled from a distant station. Ills. 4500 w.

Gen Elec Rev—Sept., 1913. No. 44833 C. A Modern Substation in the Coeur d'Alene Mining District. John B. Fisken. Describes a typical mine substation built for supplying three-phase power at 2300 volts. Ills. 3000 w. Pro Am Inst of Elec Engrs-Sept., 1913. No. 45517 F.

An Interesting Design of Alternating-Current Switchboard. Illustrated description of a board for control of four-wire three-phase plant. 1500 w. Elec Rev & W Elect'n—March 1, 1913. No. 40253. The Standard-Unit Switchboard. D.

S. Morgan. Discusses the commercial factors that made the standard-unit board possible, and illustrates the working out of the scheme by solving the control requirements of three typical installations. Ills. 1500 w. Gen Elec Rev-March, 1913. No. 40251 C.

Installing a 12,000-Ampere Switchboard in an Isolated Plant. Illustrates and describes details of design and construction of an installation in Chicago. 1200 w. Elec Rev & W Elect'n-Aug.

16, 1913. No. 44412.

Turbine Plant.

Lake Shore Generating Plant. A. D.

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Cost

Williams. Illustrated description of the new turbine plant of the Cleveland Electric Illuminating Co. Deals with the plant in general in the present article. 1600 w. Power—March 18, 1913. Serial. 1st part. No. 40688.

See also Central Stations, under Gen-

erating Stations.

Turbine Station The Waterside Turbine Station at Louisville, Ky. Illustrates and describes features of design and construction. 2500 w. Elec Wld-Oct. 25, 1913. Serial. 1st part. No. 46201.

Turin

The Municipal Electric Plant in Turin (Gli impianti elettrica municipali della cità di Torino). Italo Bertoglio and Ugo Botto. The first part covers an historical outline of the municipal plant. Serial. 1st part. 2200 w. Industria—May 11, 1913. No. 42504 D. Water-Wheels

Discussion on "Principles to be Considered in Selecting a Water-Wheel Unit." O. B. Coldwell. Portland, Ore., April 18, 1912. 6500 w. Pro Am Inst of Elec Engrs—Dec., 1912. No. 38516 F.

LIGHTING

Arc Lamps

Characteristics of Magnetite Arc Lamps. A. G. Rakestrow. Discussion of the operation, illumination and applica-tion features. 1200 w. So Elect'n—Nov., 1912. No. 37658.

Enclosed Flame Arc Lamps. Chamberlin. Illustrated description of the design and construction and how difficulties in efficient operation were overcome. 1000 w. Gen Elec Rev—

overcome. 1000 w. Gen Elec Rev—
Nov., 1912. No. 37217 C.
Indirect Lighting by Arc Lamps. Justus Eck. Read before the Victorian Inst.
of Elec. Engrs. Explains why indirect lighting is recommended, and why by arc lamps. Discusses the objections to such lighting, and illustrates and describes examples as applied to a number of industries. 6000 w. Aust Min Stand-Feb.

13, 1913. No. 40813 B.

Long Burning Flame Carbon Arc
Lamps. G. W. Roosa. Illustrates and describes types and various applications. 2000 w. Elec Jour—June, 1913. No.

43225.

Arcs and Eletrodes. S. H. Blake and L. H. Couchey. Illustrated study of the characteristics of carbon arcs and the making of electrodes. 4000 w. Gen Elec Rev—July, 1913. No. 43327 C. Recent Progress in Electrical Illumi-

nation by Arcs (Recenti progressi nella illuminazione elettrica ad arco). Guido Peri. Description of the new magnetite arcs, closed flames, etc., and their standards. Ills. Serial. 1st part. 2500 w. Industria—July 13, 1913. No. 43592 D. Flame Carbon Arc Lamps. T. J. Pace.

Illustrates and describes various forms of carbon arc lamps and their applications. 2200 w. Can Elec Assn-June,

1913. No. 44813 N.

See also Street, under Lighting.

Stability of the Electric Arc. G. W. Roosa. A study of the electric arc, its sustaining power, properties affecting

stability, results produced by various forces, etc. Ills. 2800 w. Elec Jour forces, etc. Ills. 2800 Dec., 1912. No. 38626.

Further Research on the Electric Arc as a Standard of Light. J. F. Forrest. Read before the British Assn. Report of research carried out in the electric engiresearch carried out in the electric engineering laboratory of the East London College. Ills. 1500 w. Elect'n, Lond—Sept. 26, 1913. No. 45729 A.
Carbon and Impregnated Electrodes for Arc Lamps. A. T. Baldwin. Discusses electrodes designed for modern street lighting. 5000 w. Elec Wld—Oct. 18, 1913. No. 45961.

The Conditions Under Which an Arc

The Conditions Under Which an Arc Light in Particular Can Not Be Produced (Ueber die Bedingungen, unter welchen ein Lichtbogen, überhaupt nicht entste-hen kann) F. Kraus. The two conditions, current and arc-metal, non-productive of light, and experiments in proof thereof. Ills. Serial. 1st part. 2800 w. Elek u Masch—Aug. 24, 1913. No. 46073 D.

Automatic Plant.

An Automatic Electric Light Plant. The Lister-Bruston lighting set which starts and stops automatically. 1500 w. Engr, Lond—Feb. 28, 1913. No. 40493 A.

Bridges
The Electrical Work on a Large Public
Bridge. Illustrates and describes the construction for outline lighting and general illumination of the Broadway bridge in Portland, Ore. 2000 w. Elec Rev & W Elect'n-Sept. 6, 1913. No. 45006.

Buildings

The Lighting of Public and Semi-Public Buildings. L. B. Marks. Considers the fundamental principles of the artificial illumination of interiors; the intensity as compared with daylight, and related subjects. 6500 w. Br Build— Sept., 1913. No. 45474 D.

Cost

Comparative Cost of Gas and Electric Lighting in Strassburg. Trans. from Elektrotechnische Zeit. Gives a comparDistribution LIGHTING Illumination

ison showing that electric light is better and cheaper than gas. 1500 w. Elect'n, Lond—Oct. 17, 1913. No. 46226 A.

Distribution

A Rational Method of Showing Light Distribution. Robert French Pierce. Points out the misconceptions that a zonal-candle-power diagram may produce, and offers two polar diagrams by way of substitution. 1500 w. Elec Wld—Feb. 8, 1913. No. 39751.

Electric Lighting

Chemistry and Electric Lighting. O. Kruh. Abstract of articles in Elektrotechnik und Maschinenbau. Discusses the elements that have been tried to increase the efficiency. 2500 w. Elect'n, Lond-Nov. 29, 1912. No. 38115 A.

Europe

Electrical Service in European Cities. Dr. Louis Bell. Remarks on the wide use of tungsten and flame-arc lamps. 2500 w. Elec Wld-Sept. 27, 1913. No. 45493.

Factories

Modern Illumination for Industrial Plants. Harry C. Spiliman. States results obtained with the Mazda lamps. Ills. 1200 w. Elec Rev & W Elect'n— Sept. 6, 1913. No. 45007.

Filaments

A Method of Spot-Testing Incandescent Filaments. C. F. Lorenz. Describes a method used in the laboratory of the Nat. Elec. Lamp Assn. Ills. 1500 w. Elec Wld—May 8, 1913. No. 41882.

The Process of Drawing Tungsten Wire (Ueber die Herstellung von gezo-genen Wolframdraht). O. Kruh. An analysis of the properties of tungsten, its preparatory treatment, and drawing process. Ills. Serial. 1st part. 3200 w. Elek u Masch-April 13, 1913. No. 42160 D.

Head-Lamps

Theory, Design and Operation of Head-Lamps. Articles by Charles R. Sugg, A. R. Dennington, and L. C. Porter, covering the basic principles of the illumination relations of, the design of light, sources for, and the service performance of head-lamps. Ills. 4000 w. Elec Wld—Oct. 11, 1913. No. 45803.

Helium

Luminous Properties of Electrically Conducting Helium Gas. II. Reproducibility. P. G. Nutting. A report of tests, of interest in connection with the possible use of the helium tube as a primary photometric standard. 2500 w. Bul Bureau of Stand-Nov. 1, 1912. No. 38663 N.

House Lighting

The Lighting of Small Country Houses.

J. Caldwell. Gives comparative particulars of two typical installations of petrol gas and electric light. 1200 w. Elec Rev, Lond—April 18, 1913. No. 41751 A. Illuminants

Efficiency of Illuminants. Charles P. Steinmetz. Deals with the relative importance of the various characteristics of an illuminant as affecting its suitability 2000 w. for different purposes.

Elec Rev—Nov., 1912. No. 37213 C. Stroboscopic Effects Obtainable with Incandescent Filaments as Illuminants. C. F. Lorenz. Considers effects due to maximum flicker stimulus. Ills. 2000 w. Elec Wld—Nov. 30, 1912. No. 37950. The Acetylene-Electric Flame. C. F.

Lorenz. Describes experiments relating to electrically caused flame distortions, with an increase of luminosity that may be obtained by sending current through carbon-containing flames. Ills. 3000 w. Elec Wld—March 8, 1913. No. 40374.

(llumination

The Lighting of the Boston Electrical Show. Dr. Louis Bell. An illustrated article explaining some of the difficulties and how they were successfully overcome. 1800 w. Gen Elec Rev-Nov., 1912. No. 37215 C.

A Rational Method of Showing Light Distribution. R. F. Pierce. Diagrams and description of methods. 2000 w. Pro

Age—Dec. 2, 1912. No. 38016. Industrial Lighting. C. L. Eshleman. A discussion of artificial illumination showing that efficient illumination is necessary, that there are lighting units available, how they may be applied to produce desired results and the effects obtained from their use. Ills. 4000 w. Pro Am Inst. of Elec Engrs-Jan., 1913. 39360 F.

Discussion on "Industrial Illumination and the Average Performance of Lighting Systems," C. E. Clewell, and "The Problems of Interior Illumination," Bassett Jones, Jr., Boston, Mass., June 26, 1912. 9000 w. Pro Am Inst of Elec

Engrs—Jan., 1913. No. 39361 F.
Illumination of Interiors. Pro Preston S. Millar. Lecture before a joint meeting in N. Y. City. Discusses the requirements of the well qualified illuminating engineer, and his work. Ills. 8500 w. Gas Age— Jan. 1, 1913. No. 38705. The Lighting of Picture Galleries and

Museums. S. Hurst Seager. A critical discussion of methods of lighting, the principles governing the problem, etc. Ills. 10500 w. Jour Roy Inst of British Archts—Nov. 23, 1912. No. 38908 N.
The Electric Lighting of Villages. W

T. Wardale. Considers things essential

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to success, and methods which ought to be adopted, illustrating different aspects of village lighting. 4500 w. Elec Rev, Lond—Jan. 10, 1913. No. 39246 A.

The Economic and Hygienic Value of Good Illumination. Leon Gaster. Shows its hygienic necessity, its desirability in preventing accidents, and on purely economic grounds; also discussion. Ills. 7000 w. Jour Soc of Arts—Feb. 7, 1913. No. 39902 A.

Hospital Illumination. Reports a discussion in Chicago at meeting of the Illuminating Engng. Soc. The subject was introduced by Meyer J. Sturm. 2500 w. Elec Rev & W Elect'n—March 22, 1913.

No. 40775.

Studies of Recent Electric Luminescent Lamps. The Action of Extreme Red and Ultra-Violet on the Eyes (Etude des nouvelles lampes électriques luminescentes. Action sur l'œil du rouge extrême et de l'ultraviolet). MM. Broca, Jouast, de la Gorge and Laporte. Neon tubes, mercury quartz lamps, and their effects on visual acuity. 4200 w. Bull Soc Int d'Electriciens—Feb., 1913. No. 40582 F.

Relative Efficiency and Advantages of Direct, Semi-Direct and Indirect Lighting. L. Crouch. Gives test data comparing the efficiency, which favor semi-direct lighting. 1600 w. Elec Rev, Lond —March 21, 1913. No. 41000 A. Electric Lighting in the Period from

1883 to 1913 (Die elektrische Beleuchtung in der Zeit von 1883 bis 1913). J. Sahulka. A review of the lines of development. 4000 w. Elek u Masch (Special)—March, 1913. No. 41491 D. Effective Artificial Illumination. Ed-

ward R. Knowles. The need of studying each case by itself. 1000 w. Am Archt—

April 30, 1913. No. 41805 C.
Dussaud's "Cold Light"—Its Remarkable Applications. Jacques Boyer. Illustrated description of the apparatus used and the uses for which it is adapted. 1000 w. Sci Am-May 31, 1913. No. 42521.

Measurement of Illumination. S. L. E. Rose and H. E. Mahan. Deals with the intensity, giving an outline of the requirements of an instrument for making the tests. Ills. 2000 w. Gen Elec Rev—May, 1913. No. 41817 C.

Contrast in Illumination. J. R. Cra-Discusses the principles of comfortable lighting both natural and artificial. 2000 w. Elec Wld—June 7, 1913.

No. 42730.

Some Tendencies in Electric Lighting. A survey of present tendencies of the lighting art. 4000 w. Elec Rev & W Elect'n—May 31, 1913. No. 42652.

Notes in Steel Mill Lighting. C. E.

Clewell. Describes points of interest in a large variety of locations investigated. 3000 w. Elec Jour-June, 1913. No. 43219.

Some Theoretical Considerations of Light Production. W. A. Darrah. Discusses the limitations of various electric illuminants now in use and the effect upon the progress of the art and upon future developments. 3000 W. Engng Soc-Sept., 1913. No. 46368 N.

See also Shop Lighting, under MECHAN-ICAL ENGINEERING. Machine Works and

Foundries.

Incandescent Lamps

Automatic Current Regulation During Exhaustion of Incandescent Lamps. Describes an apparatus for the automatic switching in of the lamps when such a vacuum has been attained that the filament may be safely incandesced, and also the opening of the supply circuit. Ills. 2000 w. Elec Rev, Lond—Nov. 1, 1912. No. 37388 A.

Ignition of Gas by Standard Incandescent Lamps. H. H. Clark. A preliminary statement summarizing the results of tests. 600 w. U S Bureau of Mines

—Tech paper 28. No. 38670 N.

Half-Frosted Incandescent Lamps. A.

J. Makower and U. A. Oschwald. Brief report of requirements carried out to determine the variation in candle-power produced by frosting. 700 w. Elect'n, Lond—April 25, 1913. No. 41916 A.

The Problem of Life Testing Electric Incandescent Lamps. H. S. Dunning. Brief account of the testing work being done by manufacturers. 1200 w. Elec Jour-June, 1913. No. 43226.

I. Improvements in the Manufacture of Incandescent Lamps. B. F. Fisher, Jr. II. Increased Efficiencies of Lamps. J. Franklin Meyer. Deals particularly with the changes in Mazda lamps. 2000 w. Elec Jour—June, 1913. No. 43221.

Indirect

Some Interesting Installations of In-rect Lighting. Leonard V. James. direct Lighting. Illustrates and describes recent improvements introduced in this system of lighting. 1000 w. Elec Rev & W Elect'n—Sept. 6, 1913. No. 45008.

Laboratory

The Illuminating Engineering Laboratory of the General Electric Company. S. L. E. Rose. Illustrated description of this laboratory and the work carried on, reviewing its development. 1200 w. Ill Engng Soc—Sept., 1913. No. 46363 N.

Lamps Metal Filament Lamps. Alexander Siemens. Read before the Inst. of Met-

Lighting Comparisons

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Public Buildings

Reviews their development, stating the requirements they must meet. 1500 w. Mech Engr—March 21, 1913. No. 41008 A

The Half-Watt Incandescent Electric Lamp. Sydney F. Walker. An explanatory letter giving information respecting the probable character of these lamps. 1500 w. Gas Wld—Sept. 13, 1913. No.

Report of the Committee on Progress. Reviews progress in incandescent electric lamps, arc lamps, vacuum tube lamps, gas lamps and appurtenances, acetylene, and other systems and subjects related. 11000 w. Ill Engng Soc—Sept., 1913. No. 46372 N.

Lighting Comparisons

The Economic Relation Between Gas Electric Operation (Economische verhoudingen van gasbedrijven en electriciteitsbedrijven). F. Erens. A study of lighting costs under both systems. 5000 w. De Ingenieur—Dec. 28, 1912. No. 39061 D.

Magnetite Street Lighting. L. Burpee. Reviews the development of street lighting by electricity and the magnetite electrode. Ills. 3000 w. Can Elec Assn—June, 1913. No. 44699 N.

Mercury-Arc

Development of a New Quartz-Tube Mercury Arc Lamp. E. Weintraub. Il-lustrates and describes the development of a new type, explaining the beneficial results expected. 1500 w. May 10, 1913. No. 41965. Elec Wld-

Mercury Vapor

The Quartz Mercury Vapor Lamp. Illustrated detailed description. Ir & Coal Trds Rev-Dec. 6, 1912. No.

The Cooper Hewitt Quartz Tube Mercury. Vapor Lamp. Joseph C. Pole. Illustrated detailed description. 1000 w. Elec Wld—Jan. 4, 1913. No. 38836.

The Possibility of Developing Mercury-Vapor Arc Rectifiers on the Basis of Experimental Research (Ueber die Entwicklungsmöglichkeit des Quecksilberhampf-Gleichrichters auf Grund experimenteller Untersuchungen) Wilb. Tschudy. Theo-retical discussion. Diagrams. 7500 w. Elek Kraft u Bahnen—Feb. 4, 1913. No. 40564 D.

Theory of Mercury-Vapor Apparatus. Percy H. Thomas. Read before the New England Sec. of the Ill. Engng. Soc. The action of the Cooper Hewitt lamp construed on the basis of the election theory. 4000 w. Sci Am Sup-May 31, 1918. No. 42551.

The Mercury-Vapor Quartz Lamp.

W. A. D. Evans. Explains the difference between the standard mercury-vapor tube lamps and the quartz lamps and gives data on the characteristics of quartz and also as to the construction of the burners. Ills. 5000 w. Ill Engng Soc-Sept., 1913. No. 46371 N.

Municipal Plant

A Successful Municipal Lighting Plant. Illustrated description of the plant at 3000 w. Crawfordsville, Ind.

Engag—Feb., 1913. No. 40095 C.
Municipal Lighting Plant of Troy,
Ohio. L. A. Pool. Illustrated description, with financial statement. 2000 w.

Munic Engng—March, 1913. No, 40880 C. Pasadena Municipal Lighting Plant. Information concerning this electric light plant, the regulation of rates and related subjects. Ills. 4000 w. Munic Engng-June, 1918. No. 43178 C.

Nitrogen Lamp
The Nitrogen Filled Lamp. Information concerning the new nitrogen-filled tungsten lamp and the advantages. Ills. 2000 w. Gen Elec Rev—Oct., 1913. No. 45578 C.

I. Tungsten Lamps of High Efficiency. Describes investiga-Irving Langmuir. tions into the cause of blackening of the bulbs and methods of preventing it. II. Tungsten Lamps of High Efficiency. Irving Langmuir and J. A. Orange. Describes in detail the high efficiency produced by filling the bulbs with nitrogen vapor. 10800 w. Pro Am Inst of Elec Engrs—Oct., 1913. No. 46338 F.

Panama Canal

See same heading, under CIVIL EN-GINEERING, Waterways and Harbors.

Pentane Lamps

The Pentane Lamp as a Working Standard. E. C. Crittenden and A. H. Taylor. Recommends the use of tested pentane lamps as secondary standards of candle power when electric standards are not available. 7500 w. Ill Engng Soc—Sept., 1913. No. 46374 N.

Public Buildings

Hospital Lighting. William S. Kilmer. Treats of the lighting of the operating room and wards, and describes practical fixtures for the solution of the problems. 2000 w. Ill Engng Soc-Sept., Ills. 1913. No. 46376 N.

Experiments in the Illumination of a Sunday-School Room With Gas. Edwin F. Kingsbury. Describes some experiments in the illumination of the Sundayschool room of the Summit Presbyterian Church, of Germantown, Philadelphia. Ills. 2000 w. Ill Engng Soc—Sept., 1918. No. 46369 N.

Church Lighting. Robert B. Ely. Il-

Street Lighting

lustrated discussion of lighting systems in use. 4000 w. Ill Engng Soc—Sept., 1913. No. 46365 N.

The Requirements of Theater Lighting. S. L. E. Rose and H. E. Mahan. A description of the purpose and means of lighting the stage, auditorium and build-ing exterior. Ills. 1500 w. Gen Elec Rev—Oct., 1913. No. 45588 C.

Quartz Lamps

The Cooper Hewitt Quartz Lamp. Joseph C. Pole. Illustrated detailed description of types and uses. 2000 w. Elec Jour—July, 1913. No. 43803.

Reflection

The Diffuse Reflecting Power of Various Substances. W. W. Coblentz. An account of an investigation of the reflecting power of matte surfaces of various substances. Ills. 140 pp. Bul Bureau of Stand—April 1, 1913. No. 43338 N.

Reflectors

An Investigation on Reflectors for Tungsten Lamps. A. L. Powell. A summary of results of investigations of various types of reflectors. Ills. 3500 w. Gen Elec Rev—Nov., 1912. No. 37218 C. Investigation of Diffusing Glassware.

M. Luckiesh. Describes a method for obtaining curves to show the diffusing properties, and some applications of the data. Also editorial. 2500 w. Elec Wld —Nov. 16, 1912. No. 37612.

The Diffuse Reflecting Power of Various Substances. W. W. Coblentz. An account of research work undertaken to establish methods for the production of standard absorbing surfaces from standard materials, and related problems. 9500 w. Jour Fr Inst-Nov., 1912. No. 37543 D.

Reflectors and Accessories for Lighting Inner Rooms with Metal Filament Lamps (Reflektoren und Armaturen für die Beleuchtung von Innenräumen mit Metalldrahtlampsen). L. Bloch. Studies on the illuminating intensities of various reflectors. Ills. 2200 w. Elek u Masch
—Oct. 13, 1912. No. 37474 D.

Reflectors for Metal Filament Lamps. Dr. L. Bloch. Abstract from Elektrotechnik und Maschinenbau. An examination of the devices used with a view to ascertaining whether improvement is possible. 1200 w. Elect'n, Lond— Elect'n, possible.

March 21, 1913. No. 41001 A.
Data Concerning Incandescent-Lamp
Reflectors. G. H. Stickney and A. L. Powell. Gives facts and figures relating to the effectiveness and efficiency of various types. 3000 w. Elec Wld-Sept. 6, 1913. No. 45011.

Characteristics of Enclosing Glass-ware. Van Rensselaer Lansingh. A report of tests made on various kinds of glassware enclosing illuminants. Photometric curves and data are given. Ills. 2500 w. Ill Engng Soc—Sept., 1913. No. 46366 N.

Half-Frosted Lamps in Reflectors. W. T. Maccall. Reports experiments on such lamps. 500 w. Elect'n, Lond—Oct. 3, 1913. No. 45844 A.

Reflectors for Tungsten Lamps in Industrial and Office Lighting. A. L. Powell. A discussion of nature and application of designs, illumination secured and efficiency of reflectors. Ills. 4500 w.

Elec Engng-Oct., 1913. No. 45696.

Shop Lighting

Factory Lighting. M. H. Flexner and A. O. Dicker. Aims to bring out the most important factors entering into the design of a lighting system for a factory. 3500 w. Ill Engng Soc—Sept., 1913. No. 46379 N.

Store Lighting

Distinctive Store Lighting. Clarence L. Law and A. L. Powell. Describes in detail several typical installations, giving information of value to designing

ing information of value to designing engineers. Ills. 4000 w. Ill Engng Soc—Sept., 1913. No. 46373 N.
Store Lighting. J. E. Philbrick. Outlines the gas-lighting installations of eight small stores. 2200 w. Ill Engng Soc—Sept., 1913. No. 46378 N.
The Lighting of Show Windows. H. B.

Wheeler. Discusses the intensity required and the selection and placing of reflectors. Ills. 3000 w. Ill Engng Soc—Sept., 1913. No. 46362 N.
The Lighting of High Class Stores by

the Indirect System. Harvey B. Wheeler. A study of the requirements for satisfactory illumination of stores by the indirect system. Ills. 1700 w. Elec Engng-Oct., 1913. No. 45697.

Street Lighting
Study of Relative Merits of the Various Types of Electric Arc and Incandescent Lamps for Lighting Urban and Suburban Streets. Harold H. C. Lasker. Prize essay. 5800 w. Jan., 1913. No. 39950 D. Stevens Ind-

Aesthetics in Street Lighting. George W. Roosa. Considers the most essential features, business streets, residential streets, and thinly populated districts. Ills. 2000 w. Elec Jour—Feb., 1913. No. 40154.

Electric Street-Lighting at Norwich. J. R. Dick. Illustrated description with statistics of the system installed. 3300 w. Elect'n, Lond — March 7, 1913. No.

40705 Å.

Recent Developments in the Street Lighting of Manchester. S. L. Pearse and H. A. Ratcliff. Principally a record

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of the work undertaken; the results obtained, and the tests and experiments upon which the satisfactory completion of the work depended. Ills. 9500 w. Inst of Elec Engrs—March, 1913. No. 40702 N.

Standard Clauses for Inclusion in a Specification of Street Lighting. A. P. Trotter. Abstract of a paper before the Ill. Engng. Soc. States objections to the illumination basis, discusses horizontal, vertical or direct-ray measurements, etc. 6000 w. Elct'n, Lond—April 18, 1913. No. 41753 A.

Streets

The Advance in Street Lighting. Illustrated account of recent developments in ornamental street lighting, giving tabulated statistics of cost. 1600 w. Munic Engng—Nov., 1912. No. 37532 C.

Characteristic Ornamental Street Lighting. Illustrates and describes recent installations in various cities. 2500 w. Munic Engng—Nov., 1912. No. 37531 C.

Mazda Lamp Street Lighting. A. L. Chapin. Discusses the requirements for good street illumination, the characteristics and life of the mazda lamp, general practice, etc. Ills. 3000 w. Munic Jour Nav. 7, 1912, No. 27325

—Nov. 7, 1912. No. 37325.

Street Lighting at Manchester, Eng. Reports upon flame arc lighting and high-pressure gas lighting. Also editorial. 9000 w. Elect'n, Lond—Nov. 1, 1912. No. 37391 A.

Reinforced Concrete Lighting Standards (Eisenbeton-Beleuchtungsmaste). Describes several types of ornamental street and private standards. Ills. 2000 w. Beton ú Eisen—Oct. 2, 1912. No. 37428 E.

Electricity Versus Gas for Street Lighting. T. Osborne. A summary of tests made by H. T. Harrison and J. A. Body with comments and discussion of results. 2200 w. Elec Wld—Dec. 14, 1912. No. 38215.

Electric Development at the Coast. C. H. Fletcher. Illustrated account of street lighting in Vancouver. 1500 w. Can Elec News—Dec., 1912. No. 37977 C.

Tungsten Lamps for Street Lighting (Le lampade a tungsteno nella illuminazione stradale). Guido Peri. Discusses suitable reflectors and illuminating efficiency. Ills. Serial. 1st part. 2800 w. Industria—Dec. 1. 1912. No. 38496 D. Illumination of Business Streets. G.

W. Roosa. Discusses the advertising value of "white ways," and the principles of good illumination. Ills. 1200 w. Elec Jour—June, 1913. No. 43218.

The Street Lighting and Fixtures of the City of New York. C. F. Lacombe.

Describes the plan of development and present conditions. Ills. 4000 w. Elec Jour—June, 1913. No. 48223.

City Street Lighting with Series Tungsten Lamps. G. H. Stickney. Enumerates the principal considerations necessary and gives valuable information. 3500 w. Gen Elec Rev—Sept., 1918. No. 44832 C.

The Lighting of Residence Streets. Alan Bright. General discussion, with illustrated descriptions of systems adopted in various cities. 1200 w. Elec Jour—Sept., 1913. No. 45097.

Park and Boulevard Lighting in Chi-

Park and Boulevard Lighting in Chicago. Illustrates and describes interesting features of the electrical equipment. 4000 w. Elec Rev & W Elect'n—Sept. 20, 1913. No. 45255.

Public Street Lighting in Chicago. Describes features in the development of the municipal electric street-lighting system. Ills. 4500 w. Elec Rev & W Elect'n—Sept. 6, 1913. No. 45005.

Some Interesting Construction for Street Illumination. Illustrated description of a system recently installed in Maryville, Mo. 2500 w. Elec Rev & W Elect'n—Sept. 13, 1913. No. 45114. Intensified Lighting of Business Thoroughfares. Illustrates and describes in-

Intensified Lighting of Business Thoroughfares. Illustrates and describes installations and gives data on illumination and arrangement of units. 2000 w. Elec Wld—Sept. 6, 1913. No. 45009.

A Review of Recent progress in Outdoor Decorative Lighting. Alan Bright. Ills. 2500 w. Elec Engng—Oct., 1913. No. 45695.

Theatres.

Electric Theatre Installations. S. Burns. Abstract of paper read before the Manchester Students' Soc. of the Inst. of Elec. Engrs. Discusses the electrical equipment of the cinematograph theatre. 3500 w. Elect'n, Lond—March 7, 1913. No. 40704 A.

Theater Illumination. H. C. Harris. Discusses the suitability of various types of incandescent lamps and their arrangement. 2500 w. Elec Rev & W Elect'n—April 19, 1913. No. 41365.

Three-Phase

Electric Lighting and the Conversion of Three-Phase Into Single-Phase Currents of Triple Frequency. F. Spinelli. Trans. from L'Elettricista. Illustrated description of apparatus devised by the writer, capable of three simultaneous functions, and the solving of the problem. 1100 w. Elect'n, Lond—Oct. 25, 1912. No. 37289 A.

Tungsten
Notes on the Use of Tungsten Filament Lamps with Parabolic Reflectors.

Tungsten Lamps

LIGHTING

Voltage Variations

G. H. Stickney. Considers how to obtain the best results. 2000 w. Gen Elec Rev —Dec., 1912. No. 38000 C.

Tungsten Lighting in Modern Industrial Establishments. Alex. J. Airston. Discusses the fundamental requirements of tungsten lighting installations. Ills. 2000 w. Elec Jour—Dec., 1912. No. 38627

The Wolfram Lamp and Its Development, Especially the Latest Improvement (Die Wolframlampe und ihre Entwicklung unter Berücksichtigung der letzten Verbesserungen). A. Lederer. Historical review with details concerning the osmium filament. Ills. 3200 w. Elek u Masch—Dec. 29, 1912. No. 39054 D.

On the Deviation from Lambert's Cosine Law of the Emission from Tungsten and Carbon at Glowing Temperatures. A. G. Worthing. Abstract of a paper before the Am. Phys. Soc. Deals with the comparative brightness of tungsten and carbon. 1500 w. Elec Rev & W. Elect'n—April 5, 1913. No. 41105.

The Rating and Life of Tungsten Filament Lamps. Editorial review of a report of experiments and results on the rating and life of tungsten lamps. 2000 w. Engng—May 30, 1913. No. 42784 A.

The Drawn Tungsten Filament. Dr. O. Kruh. Abstract translated from Elektrotechnik und Maschinenbau. An account of methods employed in preparing the tungsten filament, the improvements to the process and recent patents. 3000 w. Elect'n, Lond—Aug. 29, 1913. No. 45080 A.

See also same heading, under MECHANICAL ENGINEERING, Materials of Construction.

Tungsten Lamps.

Electric Sign Lighting with Tungsten Lamps. O. P. Anderson. Information for utilizing the new lamps to the best advantage electrically. Ills. 3500 w. Gen Elec Rev — March, 1913. No. 40248 C.

The Osram Lamp of Wire-Drawn Tungsten (La lampada Osram di tungsteno trafilato). H. Remané. Description of the various stages of manufacture, and commercial uses. Ills. 2100 w. Industria—June 22, 1913. No. 43590 D.

The Use of Tungsten Lamps in Electric Signs. O. P. Anderson. Discussion of the economical operation and arrangement of different sizes of lamps. 2000 w. Elec Engng—Aug., 1913. No. 44292.

The Cooling Effect of Leading-In Wires Upon the Filaments of Tungsten Incandescent Lamps of the Street Series Type. T. H. Amrine. Report of a study and experimental results. Ills. 3500 w. Ill Engng Soc—Sept., 1913. No. 46367 N.

See also Nitrogen Lamps, and Reflec-

tors under Lighting.

Vacuum Tubes
On the Deduction of Wien's Displacement Law. E. Buckingham. Gives a simplified deduction related only to radiation in vacuo. 3500 w. Bul Bureau of Stand—Nov. 1, 1912. No. 38666 N.

Wave-Lengths of Neon. Irwin G. Priest. A report of research work with a summary of results. 1500 w. Bul Bureau of Stand—Nov. 1, 1912. No. 38665 N.

Vapor Lamps.

The Characteristics of Vapor Lamps. A. G. Rakestraw. Considers light sources in which the conducting medium is a gas or vapor. Ills. 1800 w. So Elect'n—March, 1913. No. 40650.

Visual Acuity

Vision and the Measurement of Light and Illumination. Elihu Thomson. Discusses the theory of vision and the ability of the human eye to perceive color contrasts; and considers illumination measurement. 3500 w. Gen Elec Rev—Nov., 1912. No. 37214 C.

Experimental Tests to Determine the Effect of a Colored Background Upon Visual Perception. Sydney W. Ashe. A study of acuity. Ills. 2000 w. Gen Elec Rev—April, 1913. No. 40992 C. Radiant Energy and the Eye. M. Luckiesh. Discusses the possible effect

Radiant Energy and the Eye. M. Luckiesh. Discusses the possible effect on the eye of the absorption of energy other than luminous. Also editorial. 3000 w. Elec Wld—Oct. 25, 1913. No. 46203.

The Efficiency of the Eye Under Different Systems of Illumination—The Effect of Variations in Distribution and Intensity. C. E. Ferree. An investigation of the effect of variations in the distribution of light on the efficiency of the eye for a period of work. 4500 w. Ill Engng Soc—Sept., 1913. No. 46364 N.

Visual Effects

Is the Electric Light Harmful to the Eyes (Ist das elektrische Licht für die Augen schädlich)? Fritz Kesseling. Studies on the visual effects from electricight waves. 2500 w. Elek Rund—Oct. 10, 1912. No. 37477 D.

Voltage Variation

Causes of Voltage Variation in the Operation of Lighting Systems. J. J. Sullivan. States the causes of unsatisfactory voltage supply and points out the sources of trouble. 1200 w. Gen Elec Rev—Aug., 1913. No. 44091 C.

MEASUREMENT

Heat Measurements

Winch Winch

The "Jandus" Winch. Illustrated description of an ingenious winch, handy for raising and lowering arc lamps wherever situated. 700 w. Engng—June 20 1913. No. 43389 A.

Wiring

The Wiring of Shop Buildings of Steel Construction. Ernest G. Bradshaw. Il-lustrates and describes methods which have given excellent results. 3000 w. So Elect'n-Dec., 1912. No. 38162.

MEASUREMENT

Alternating Current
The Use of the Synchronous Commutator in Alternating Current Measure-ments. Frederick Bedell. An explanation of the possibilities of the rectifying or integrating commutator. Ills. w. Jour Fr Inst—Oct., 1913. 5500 46316 D.

Amperes

A Determination of the International Ampere in Absolute Measure. E. B. Rosa, N. E. Dorsey, and J. M. Miller. Explains the relation of absolute to international units, recent absolute measurements of current, types of instruments and the Rayleigh balance, its theory, etc. Ills. 40000 w. Bul Bureau of Stand—June 15, 1912. No. 38658 N.

Apparatus Testing

The Desirabilty of Revising the Rating and Methods of Testing Electrical Apparatus. Benjamin G. Lamme. The desirability of revising the rules of the American Institute of Electrical Engineers is considered briefly. General discussion. 9000 w. Jour W Soc of Engrs—April, 1913. No. 42862 D.

Appliances

See Electrical Progress, under Power Applications.

Cartography

Report on Cartography (Rapport sur la cartographie). Suggested system of graphical symbols applicable to electrical installations. Report, presented to the Société Internationale des Electriciens. Ills. 3500 w. Bull Soc Int d Elec-Mar., 1913. No. 41513 F.

Charts

A Multiplying Chart for the Graphical Analysis of Curves into Their Component Harmonics. H. Rottenburg. Describes a method for analyzing curves having a number of features to recommend it. 1000 w. Elect'n. Lond—March 28, 1913. No. 41132 A.

Conductivities

An Electrical Method for Comparing William Eves, Thermal Conductivities. 3rd. Describes this method. 1500 w. Met & Chem Engng-Sept., 1913. No. 44970 C.

Dynamometer

Expanding Armature Absorption Dyn-

amometer. Illustrated description of a new form of disc absorption dynamometer. 700 w. Engng—July 18, 1913. No. 43966 A.

Efficiency

Sources of Error in the Efficiency Determination of Rotating Electric Machines. Elmer I. Chute and William Bradshaw. Treats of the sources and effects of errors. 2200 w. Pro Am Inst of Elec Engrs—Feb., 1913. No. 40213. F.

Electrical Instruments

The Use of Iron in Electrical Measuring Instruments. Dr. M. Dolivo-Dobrowolsky. Abstract from Elektrotechnische Zeit. A study of problems connected with the general design of measuring instruments. 2000 w. Elect'n, Lond—May 23, 1913. No. 42742 A.

Electro-Dynamometers

The Carpentier Sensitive Electro-Dynamometer with Multiple Functions (Électrodynamomètres J. Carpentier à Joly. Detailed description of this universal metering apparatus. Ills. 4200 w. Bull Soc Int d Electriciens—Dec., 1912. No. 39078 F.

A Tubular Electrodynamometer for Heavy Currents. P. G. Agnew. Explains the theory of the instrument, its construction and performance. 1500 w. Bul Bureau of Stand—March 1, 1913.

No. 42928 N.

Electrometers

Modern Electrometers. E. N. da C. Andrade. Describes types and recent improvements introduced. Ills. 1600 w. Nature—Oct. 2, 1913. No. 45830 A.

Flow Meters, Their Applications and Relations to Increased Production and Wilkinson. Higher Efficiencies. James Wilkinson. Gives the benefits to be derived from the use of the meter, describes its working and gives information related. Ills. 1500 Gen Elec Rev-Oct., 1913. 45584 C.

Heat Measurements

Discussion on Group I Papers (Heating, Heat Measurements, Rating by Heat), New York, Feb. 26, 1913. 18500 w. Pro Am Inst of Elec Engrs—Sept., 1913. No. 45520 F.

High Voltage

MEASUREMENT

Machine Tests

High Voltage

The Sphere Gap as a Means of Measuring High Voltage. F. W. Peck, Jr. Shows that by using spheres for the electrodes of spark gaps much more consistent results are obtained. 1800 w. Gen Elec Rev—May, 1913. No. 41809 C.

Hyperbolic Functions

Hyperbolic Functions and Their Application to Problems in Electrical Engineering. J. H. Morecroft. A review of a lecture by Dr. A. E. Kennelly explaining the value of hyperbolic trigonometry in solving problems in electrical engineering. 3500 w. Sch of Mines Qr.—April, 1913. No. 41694 D.

Illumination

Graphic Solution for Illumination Prob-Neville S. Dickinson. Gives a chart for rapid calculation of illuminadensity from known values of candle power and of vertical and horizontal distances from the source. 2500 w. Elec Wld—Sept. 20, 1913. No. 45257.

The Installation of Power-Factor Indicators. Leonard Murphy. Explains the value of these instruments and the correct method of using them. Ills. 3000 w. Elec Rev, Lond—March 14, 1913. No. 40804 A.

Inductance

The Measurement of the Inductances of Resistance Coils. Frederick W. Grover and Harvey L. Curtis. Treats of the measurement of the effective inductance of "noninductive" resistance coils and multipliers for use in alternating current bridges and in potential circuits when it is desired to know the phase angle. 9800 w. Bul Bureau of Stand— Nov. 1, 1912. No. 38662 N. The Four-Terminal Conductor and the

Frank Wenner. Thomson Bridge. Points out the conditions which must be fulfilled in order that both resistance and inductance be definite, and discusses points to be observed in the design of low-resistance standards to carry large currents. 17500 w. Bul Bureau of Stand-Nov. 1, 1912. No. 38667 N.

Instrument Testing

Instrument Testing Methods and Equipment for Central Stations. E. P. Peck. Describes the potentiometer, its use in checking ammeters and voltmeters, etc. 2000 w. So Elect'n-Nov., 1912. No. 37657.

Insulator Testing

(1) Suggested Specifiations for Testing High-Voltage Suspension Insulators. F. W. Peek, Jr. (2) Suggested Specifications for Testing High-Voltage Insulators. J. A. Sandford, Jr. (3) Insulator

Testing Specifiations for Insulators Having an Operating Voltage Exceeding 25000 Volts. Percy H. Thomas. 7500 w. Pro Am Inst of Elec Engrs—July, 1918. No. 43346 F.

Irregularity

An Apparatus for Measuring the Irregularity of A. C. Generating Sets (Sur un appareil pour la mesure de l'irrégularité des groupes électrogènes à courant alternatif). M. Boucherot. Describes the apparatus known as the "Galvanoscilla." Ills. 3800 w. Bull Soc Int des Électriciens-Nov., 1912. No. 39063 F.

Kinematography.

Kinemotographic Recording of Ballistic and Physical Phenomena with the Aid of the Direct-Current Quenched-Spark Gap. C. Cranz and B. Glotzel. Abbreviated translation from the German. Describes the method developed and results. Ills. 2000 w. Elect'n, Lond—Feb. 28, 1913. No. 40466 A.

Laboratory
The Physical Laboratory of the National Electric Lamp Association. Edward P. Hyde. A résumé of the activities of the laboratory in the development of the modern science of illumination. 6000 Jour Fr Inst—July, 1913. 44031 D.

Light Standard

The Electric Arc as a Standard of Light. J. F. Forrest. Describes methods by which it was sought to obtain a workable standard of light. Finally satisfactory results were obtained with two negatives and one positive. 3000 w. Elect'n, Lond—Aug. 8, 1913. No. 44448 A.

Load Tests

Notes on Methods of Making Load Tests on Large Induction Motors. A. M. Gives a description of methods ordinarily employed, and reasons for making compromise temperature tests, concluding that they are desirable and necessary. 2200 w. Pro Am Inst of Elec Engrs—Feb., 1913. No. 40210 F.
Comparison of Methods of Making Load Tests on A.-C. Generators and on Induction Motors. E. F. Collins and W.

E. Holcombe. Outlines some of the more practical methods that have been employed for obtaining the running tem-perature under no-load or partial-load conditions. 2500 w. Pro Am Inst of Elec Engrs—Feb., 1913. No. 40179 F.

Machine Tests

Notes on the Testing of Electrical Machinery. Describes the method of carrying out complete performance tests. Ills. 3500 w. Mech Wld—Aug. 29, 1913. Serial, 1st part. No. 45087 A.

Magnetic Fields

MEASUREMENT

Photometry

Magnetic Fields

The Measurement of Magnetic Fields. P. H. S. Kempton. Considers the magnitude of magnetic, electrical, and optical effects and their application to measurement of strengths. 1700 w. Elec Rev, Lond—Dec. 13, 1912. No. 38385.

Magnetic Observatory

The New Recording Declinometer for the Lower Rhine-Westphalian Coal District (Das neue selbstschreibende Deklinatorium für den niederrheinisch-westfälischen Steinkohlenbezirk). L. Mintrop. Describes new automatic recorder, and its results. Ills. 4500 w. Glückauf— Dec. 21, 1912. No. 39007 D.

Magnetism

A Direct Method of Measuring Magnetic Susceptibility, and an Instrument for this Purpose. W. H. F. Murdoch. Read before the British Assn. Explains the magnetometer method and its advantages. 1000 w. Elect'n, Lond-Sept. 19, 1913. No. 45561 A.

Meter Installations

Back-Porch Meter Installations. Illustrates and describes installations in small towns and villages, explaining their convenience. 1500 w. Elec Wld—May 3, 1913. No. 41883.

A New Method of Timing Watt-Hour Meters. Gordon Thompson. Describes the method and apparatus. 2500 w. Elec Wld—Feb. 1, 1913. No. 39638. Description of Some New Weston Me-

tering Instruments (Description de quelques Nouveaux Instruments de Mesure Weston). Paul Samuel. The description covers volt and amperemeters, monophase and polyphase wattmeters, synchroscopes, power-factor indicators and frequency meters. Ills. 10,000 w. Soc Belge d'-Elec-April, 1913. No. 43056 E.

Weston Meters for Uses in Central Stations (Weston-Meetinstrumente voor het gebruik in electrische centrales). A. W. Souman. Describes these wattmeters, synchroscopes, frequency meters, etc. Ills. 5400 w. De Ingenieur—June 21,

1913. No. 43548 D.

Electric Meters (I contatori elettrici). Emilio Biffi. A study of the principles underlying the action of the five main groups of electric meters. Ills. Serial. 1st part. 4800 w. Monit Tec-June 30. 1913. No. 43588 D.

Graphic Meters. G. D. Gratton. A. review of the experiences and methods followed by the Canadian Electric Power Co., Ltd., describing these meters, their performance, etc. Ills. 6000 w. Can Elec Assn—June, 1913. No. 44816 N.

An Electrical Measuring Machine. P.

E. Shaw. Describes a new machine founded on the electric contact principle. Ills. 9500 w. Inst of Mech Engrs-July. 1913. No. 44762 N.

Nomograms

Nomograms for Electrical Problems M. J. Eichhorn. Gives a nomogram for size of generator leads, a nomogram for size of wire for d. c. transmission, and a nomogram for power factor of threephase circuits, with explanations. 1000 w. Elec Rev & W Elect'n—March 1, 1913. No. 40254.

Permeability

Discussion on "Permeability Measurements with Alternating Current" (Robinson and Ball), and "Measurements of Maximum Values in High Voltage Testing" (Sharp and Farmer), Boston, Mass., June 28, 1912. 6500 w. Pro Am Inst of Elec Engrs—Jan., 1913. No. 39363 F.

Photometry

Interpretation of Photometric Curves. G. H. Stickney. Points out ways in which photometric curves may be interpreted for practical purposes, and suggests errors likely to be encountered. 2500 Gen Elec Rev-Nov., 1912. 37219 C.

Elimination of Color Differences in the Photometry of Incandescent Lamps by Means of Multi-Voltage Standards. Davis H. Tuck. Outlines a procedure for the comparison of lamps operating at different colors. 1000 w. Elec Rev, Lond—Nov. 15, 1912. No. 37805 A.

A Precision Photometer Bench and Ac-

Edward P. Hyde and F. E. Cady. Illustrated description of a photometer bench and apparatus. 1500 w. Elec Rev & W Elect'n-Nov. 16, 1912. No. 37596.

Application of the Selenium Cell to Photometry. A. H. Pfund. Abstract from Phys. Rev. Interesting account of an attempt to use selenium for this pur-1800 w. Elect'n, Lond-Dec. 6, pose. No. 38235 A. 1912.

A New Differential Watt-per-Candle Meter. Edward P. Hyde. Explains the principle of the new method and its application. 2500 w. Elec Rev & W Electr'n
—Feb. 1, 1913. No. 39643.

The Purkinje Effect and Comparison of Flicker and Equality-of-Brightness Photometers. M. Luckiesh. Reports results of tests made at the Physical Laboratory, Cleveland, O. 1600 w. Elec Wld—March 22, 1913. No. 40779.

Some Difficulties in the Photometry of Luminous Sources. (Quelques difficultés de la photométrie des sources luminescentes industrielles) MM. Broca and Laporte. The necessity of employing sim-

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Synchronism Indicators

ple methods in comparing very different light sources. 2800 w. Bull Soc Int d'Electriciens—Feb., 1913. No. 40583 F.

Silvered Mirrors and Their Preservation. Dr. Louis Bell. Discusses the preservation of mirrors used in photometric laboratories. 1500 w. Elec Wld— May 24, 1913. No. 42390.

metric laboratories. 1500 w. Elec Wld— May 24, 1913. No. 42390.

Some Studies in Accuracy of Photometry. Evan J. Evans and Ward Harrison. Reviews the more important investigations, reporting five separate studies. 2500 w. Ill Engng Soc—Sept., 1913. No. 46377 N.

The Photo Electric Cell in Photometry. F. K. Richtmyer. Discusses its possibilities for photometric use, pointing out some of its characteristics, peculiarities, and advantages. 2200 w. Ill Engng Soc—Sept., 1913. No. 46370 N.

Potentiometers

Outline of Design of Deflection Potentiometers, with Notes on the Design of Moving-Coil Galvonometers. H. B. Brooks. Outlines the principles on which deflection potentiometers are designed. 8500 w. Bul Bureau of Stand—June 15, 1912. No. 38660 N.

Deflection Potentiometers for Current and Voltage Measurements. H. B. Brooks. Gives a description of two recent forms of deflection potentiometers which are quite similar in design, explaining the theory of the use of current shunts and the most suitable values for such shunts. 6000 w. Bul Bureau of Stand—June 15, 1912. No. 38659 N.

The Use of the Alternate-Current Potentiometers for Measurements on Telegraph and Telephone Circuits. C. V. Drysdale. Drawings and description of the instrument and its applications. 2200 w. Elect'n, Lond—Aug. 1, 1913. No. 44307 A.

Power Losses

Small Alternating - Current Power Measurements. J. T. Irwin. Describes a method which gave satisfactory results. 1000 w. Electr'n, Lond—Feb. 7, 1913. No. 39906 A.

Power Measurement

The Use of the Electrostatic System for the Measurement of Power. C. C. Paterson, E. H. Rayner, and A. Kinnes. Describes the electrostatic instruments now used at the National Physical Laboratory for the measurement of alternating currents, pressure, and power. Ills. 1200 w. Inst of Elec Engrs—May 1, 1913. No. 41996 N.

Pyrometry

Recent Progress in Industrial Pyrometry. Charles R. Darling. Illustrates and describes thermo-electric pyrometers,

resistance pyrometers, radiation and optical pyrometers. 3500 w. Engr, Lond—June 13, 1913. No. 43146 A.

Radiometer

An Improved Joule Radiometer and Its Applications. F. W. Jordan. Abstract of a paper read before the Physical Soc. Describes apparatus designed to eliminate the necessity for elaborate insulation and to give a steady zero and a fairly high sensibility. Ills. 1000 w. Elect'n, Lond—Jan. 10, 1913. No. 39248 A.

Rating
Method of Rating Electrical Apparatus.
W. L. Merrill, W. H. Powell, and Charles
Robbins. Submits suggestions for a
standard of rating. 2500 w. Pro Am
Inst of Elec Engrs—Feb., 1913. No.
40175 F.

See Temperature, under Measurement.

Resistance

Measuring Currents in Underground Structures. Carl Hering. Describes a practical method for measuring the resistance of parts underground, for the purpose of measuring the currents in them with a millivoltmeter. 4500 w. Elec Ry Jour—Oct. 11, 1913. No. 45882.

Rheostat

A New Loading Rheostat. H. H. Broughton. Illustrates and describes an inexpensive loading rheostat, built upon the interchangeable unit system, for use in test rooms and engineering laboratories. 800 w. Elect'n, Lond—Aug. 15, 1913. No. 44714 A.

Shop Testing

Shop Testing of Electrical Apparatus. First of a series of articles describing, in detail, present day practice in testing various types of electrical apparatus. Ills. 4500 w. Elec Jour—Jan., 1913. Serial. 1st part. No. 39441.

Standardization

Standardization of Electric Equipment. Gives rules drafted by the Am. Min. Cong. Committee to promote safety, economy, and efficiency in the methods of installing and operating underground electrical equipment in metal mines. 2500 w. Eng & Min Jour—April 5, 1913. No. 41112.

Stray Currents

Discussion on "Measuring Stray Currents in Underground Pipes." Carl Hering. At Boston, Mass., June 28, 1912. 7000 w. Pro Am Inst of Elec Engrs—Dec., 1912. No. 38515 F.

See also Corrosion, under Electro-Chemistry.

Synchronism Indicators

The Operation and Installation of Switchboard Synchronism Indicators. J. A. Haraden. Explains the principles of

MEASUREMENT Temperature

Torque

operation and briefly describes its construction. Ills. 1000 w. Gen Elec Rev -April, 1913. No. 40993 C.

Temperature

Method of Determining Temperature of Alternating Current Generators and Motors and Room Temperature. Henry G. Reist and T. S. Eden. Calls attention to various methods of determining temperature of Apparatus, giving recommendations. 2000 w. Pro Am Inst of Elec Engrs—Feb., 1913. No. 40181 F.

The Temperature Rise of a Stationary Induction Apparatus as Influenced by the Effects of Temperature, Barometric Pressure and Humidity of the Cooling Medium. J. J. Frank and W. O. Dwyer. A theoretical résumé of the considerations, with the results of an investigation made to verify the conclusions. 4500 w. Pro Am Inst of Elec Engrs-Feb., 1913. No. 40191 F.

Measurement of Temperature in Rotating Electric Machines. L. W. Chubb, E. I. Chute, and O. W. A. Oetting. Discusses the advantages and disadvantages of standard and special methods of measuring temperatures. 4000 w. Pro Am Inst of Elec Engrs — Feb., 1913. No. 40207 F.

Effect of Air Temperature, Barometric Pressure and Humidity on the Tempera-ture Rise of Electric Apparatus. C. E. Skinner, L. W. Chubb, and Phillips Thomas. Discusses heat dissipation and points out that it is not only copper resistance changes which offset temperature rise, but also variations in other internal losses and heat dissipation. Ills. 1800 w. Pro Am Inst of Elec Engrs—Feb., 1913. No. 40204 F.

Effect of Room Temperature on Rise of Motors and Generators. Maxwell W. Day and R. A. Beekman. Gives results of special tests on motors and generators for the purpose of obtaining data. 4500 w. Pro Am Inst of Elec Engrs—Feb., 1913. No. 40196 F.

A Laboratory Investigation of Temperature Rise as a Function of Atmospheric Conditions. C. R. Blanchard and C. T. Anderson. A report of laboratory tests made to determine the effect of pressure, temperature and humidity of the air surrounding a heat dissipating body. 2000 w. Pro Am Inst of Elec Engrs—Feb., 1913. No. 40199 F. Comparison of Methods of Loading Large A.-C. and D.-C. Generators and

Synchronous Converters for Factory Temperature Tests. F. D. Newbury. Describes and illustrates four methods and discusses the relative merits. 4000 w. Pro Am Inst of Elec Engrs-Feb., 1913.

No. 40214 F.

Thermocouples and Resistance Coils for the Determination of Local Temperatures in Electrical Machines. J. A. Capp and L. T. Robinson. Discusses different devices for measuring temperatures in electrical machines, pointing out their sources of error and limitations. 2000 w. Pro Am Inst of Elec Engrs—March, 1913. No 40440 F.

Discussion on "Temperature and Elec-(Steinmetz Insulation" Lamme) and "Method of Rating Electrical Apparatus" (Merrill, Powell and Robbins). New York, Feb. 26, 1913. 25000 w. Pro Am Inst of Elec Engrs—Aug., 1913. No. 44742 F.
Correction on Transformer Tempera-

tures for Variation in Room Temperature, Taking Into Account Both Copper and Iron Losses. C. Fortescue. Derives formulae for obtaining the corrected temperature rise. 1800 w. Pro Am Inst of Elec Engrs—Feb., 1913. No. 40209 F.

Methods of Determining Temperature of Transformers. W. M. McConahey and C. Fortescue. A brief discussion of conditions that affect the operating temperature of transformers and the relative merits of different methods of measuring

temperatures. 2500 w. Pro Am Inst of Elec Engrs—Feb., 1913. No. 40201 F. Methods of Determining Temperature of Transformers and of Cooling Medium. S. E. Johannesen and G. W. Wade. Discusses methods of determining the effective temperature of the cooling medium and the actual temperature of heated transformers. 5500 w. Pro Am Inst of Elec Engrs—Feb., 1913. No. 40184 F.

Testing Apparatus
High Voltage Testing and Testing Apparatus. F. C. Loring. Illustrated description of the testing equipment and methods of the University of Illinois. 2000 w. Elec Rev & W Elect'n—July 19, 1913. No. 43833.

Testing Plants

Laboratory and Testing Plant of the New Cable Shop of the Siemens-Schuckert Works (Die Laboratoriums und Prüfarlagen des neuen kabelwerkes der Siemens-Schuckert-Werke). Leon Lichtenstein. The ground plans and testing ma-chinery installed. Ills. 7000 w. Elek Kraft u Bahnen—June 4, 1913. No. 43049 D.

Tests

Inspection and Tests on Electrical Ma-inery. Hugh T. Wreaks and R. L. Shearer. The present number deals with factory tests on direct current generators and motors. 2500 w. Elec Engng-June, Serial, 1st part. No. 42726. 1913. Torque.

Signification of Torque. Franklin Van

Transformer Tests

POWER APPLICATIONS

Agriculture

Winkle. Describes the method of measuring the torque of a motor and defines the relation of torque to horsepower and kilowatt. 1200 w. Power-March 4, 1913. No. 40302.

Transformer Tests

Sources of Error in Transformer ests. W. M. McConahey and C. Fortescue. Enumerates the ordinary tests made on transformers and considers each separately. 2000 w. Pro Am Inst of Elec Engrs—Feb., 1913. No. 40206 F. Load Tests on Transformers.

K. Madden. Discusses methods of conducting load tests on more than one transformer without making such tests where one single phase transformer only is available. 2500 w. Pro Am Inst of Elec Engr—Feb., 1913. No. 40190 F.

The Myriawatt as a Unit of Electric Power. Discussions by William Kent and by George H. Barrus. 6000 w. Jour Am Soc of Mech Engrs—May, 1913. No. 42405 D.

Discussion on "The Myriawatt" (Stott and O'Neill), Boston, Mass., June 26, 1912, and New York, Feb. 27, 1913. 3000 w. Pro Am Inst of Elec Engrs—Aug., 1913. No. 44743 F.

The Myriawatt as a Unit of Power. Continued discussion of the paper by H. G. Stott and Haylett O'Neill. 3500 w. Jour Am Soc of Mech Engrs—Aug., 1918. No. 44513 D.

Voltage

Method of Testing Electrical Insulations, and the effect of Variables on Disruption Voltage. M. E. Tressler. Considers only the electrical testing of insulation materials. 4500 w. Gen Elec Rev —March, 1913. No. 40245 C.

See also Permeability, under Measurement.

Voltameter

The Silver Voltameter. E. B. Rosa and G. W. Vinal. Gives brief history of investigations on the silver voltameter, outline of the work, experiments and con-clusions. Also the chemistry of the filter paper voltameter and the explanation of striations. Ills. 131 pp. Bul Bureau of Stand—April 1, 1913. No. 43337 N. The Silver Voltameter. E. B. Rosa

and G. W. Vinal. First two of a series of articles on experimental researches, with historical review of the subject up to 1909. Also editorial note. 4000 w. Elec Wld—Dec. 14, 1912. Serial. 1st part. No. 38213.

The Silver Voltameter—Part III. E. B. Rosa, G. W. Vinal and A. S. McDaniel. Second series of quantitative experiments and the preparation and testing of silver nitrate. 14000 w. U S Bureau of Stand, No. 201-Jan. 1, 1913. No. 45547 N.

Voltmeters

The Calibration of Sphere Gap Voltmeter. S. W. Chubb and C. Fortescue. Presents calibration curves for the three sizes of sphere gaps which have been suggested as standards. Ills. 2000 w. Pro Am Inst of Elec Engrs-Feb., 1913. No. 40211 F.

Wattmeters

Integrating Wattmeters with Recording Attachments. H. S. Baker. Describes a form of integrating demand meter which graphically registers integrations of power during one minute or greater intervals. 1600 w. Can Elec Assn—June, 1913. No. 44815 N.

Wind Velocity

The Distribution of Wind Velocity in the Space Surrounding a Circular Rod in a Uniform Current of Air. J. T. Morris. Gives experimental work showing that the electrical method of measuring wind velocity is reasonably accurate. Diagrams. 2500 w. Engng—Aug. 8, 1913. No. 44462 A.

POWER APPLICATIONS

Agriculture

Electricity on the Farm. Illustrates and describes details of typical installa-tions. 1500 w. Elec Rev & W Elect'n— April 5, 1913. No. 41103.

Agriculture, Electricity and Irrigation. Putnam A. Bates. Illustrated description of how intensive farming is made possible with the electrically driven pump. 1800 w. Sci Am—May 24, 1913. No. 42318.

Electricity and Vegetation: Electro-culture (L'électricité et la végétation: L'électroculture). Jean Escard. The use of atmospheric and artificial electric currents and probable influence in agricul-

ture. Ills. 5400 w. Rev Gen des Sciences—April 30, 1913. No. 42180 D.
Electricity on the Farm. John C.
Parker. Discusses some of the difficulties in the way of farm extension. 3500 Can Elec Assn-June, 1913. 44698 N.

How Much Electricity Does the Average Farmer Use? C. J. Rohrer. Gives statistics relative to the power requirements of the farmers of the United States and tabulated data from 130 farms supplied with power. 2500 w. Gen Elec Rev—Oct., 1913. No. 45582 C.

Book-Binding

POWER APPLICATIONS

Electrical Progress

Book-Binding

Electricity in Book-Binding Plants. Illustrates and describes the application of electric motors to bindery machinery, discussing the power requirements and advantages and giving operating data. 2500 w. Elec Rev & W Elect'n—June 28, 1913. No. 43315.

Breweries

The Electrical Equipment of a Brewery. V. V. Newell. Brief illustrated description of a plant in Macon, Ga. 1000 w. Elec Wld—Nov. 23, 1912. No. 37772.

Building Equipment

Electrical Equipment in Lytton Building. Illustrates and describes the engineroom apparatus, refrigerating system, lighting installation, and telephone and signal systems in an 18-story structure in Chicago. 2500 w. Elec Wld—July 5, 1913. No. 43473.

Buildings.

The High-Potential Service in Commercial Buildings. H. G. Winsor. Describes methods employed in securing and maintaining safe and reliable installations. 1500 w. Elec Rev & W Elect'n—March 22, 1913. No. 40774.

Canning Factories

Electricity in Canning Factories. Explains the advantages and gives data. Îlls. 1800 w. Elec Rev & W Elect'n-Oct. 11, 1913. No. 45793.

Coment Mills

Electricity in Cement Works. cusses the power requirements of cement machines, selection of motors, etc. Ills. 3000 w. Elec Rev & W Elect'n-Aug. 23, 1913. No. 44557.

Collieries

See Electric Power, under MINING AND METALLURGY, Coal and Coke. Construction Work.

Motor-Driven Winches and Pulley Hoists. H. Thieme. Illustrated description of these mechanisms and the service they render. 1200 w. Elec Wld—Dec. they render. 1200 v 14, 1912. No. 38214.

Cotton Industry

Electricity in Cotton Mills. Explains how the use of motors has increased production, and gives operating data on several mills. Ills. 3500 w. Elec Rev & W Electr'n—Feb. 1, 1913. No. 39642.
Electricity in Cotton-Seed-Oil Mills.

Illustrated description of applications and statement of advantages and data. 3800 w. Elec Rev & W Electr'n—Feb. 15, 1913.

No. 39879. D. C. Plant

Plant of Packard Motor Car Co. A. R. Maujer. Illustrated outline of the rapid growth of a direct-current plant. 2500 w. Power-Feb. 4, 1913. No. 39661.

Department Stores

Electricity in Department Stores. Discusses the power requirements of elevators, refrigerating machines, ventilating fans, and miscellaneous machines used, and gives data on illumination, and the best methods of comparing isolatedplant with central station power costs. 3000 w. Elec Rev & W Elect'n—Aug. 2, 1913. No. 44138.

Domestic.

The Small Motor in the Home. James C. Munn. Aims to show how one stock motor can be made to do a number of household tasks. Illustrates and describes outfits. 3500 w. Elec Jour—March, 1913. No. 40872.

Electricity in the Household (Die

Elektrizität im Haushalte). E. Wikander. The value and uses of electricity for domestic purposes of various natures. 3600 w. Elek u Masch (Special) —March, 1913. No. 41494 D.

Domestic Electric Cooking and Heating—Results of One Year's Working. J. T. Morris. Read before the British Assn. Gives results of one year's actual employment of electricity for cooking and heating in a flat for a family of five persons. 2200 w. Elect'n, Lond—Sept. 19, 1913. No. 45559 A.

Electrical Progress The Infant Days of Electrical Engi-ering (Aus den Kindentagen der neering (Aus den Kinde Elektrotechnik). F. Ross. A 40-year backward glance to the early days of electrical development. Ills. 3600 w.

Elek u Masch (Special)—March, 1913. No. 41481 D.

The Development of Electrical Machinery (Die Entwicklung des Elektrizitätswerkes). Edmund von Rziha. A review of generating machinery during the past 30 years. 4800 w. Elek u Masch (Special)—March, 1913. No. 41482 D. The Development of Heat Motors in

the Past 30 Years (Die Entwicklung der Wärmekraftmaschinen in den letzten 30 Jahren). Leopold Kliment. Reviews Jahren). progress in the improvements of steam and internal combustion engines in relation to their service to electrical prog-

ress. 4400 w. Elek u Masch (Special)
—March, 1913. No. 41483 D.
Developments in Electrical Machine
Construction in the Last 30 Years (Die Entwicklung des Elektromaschinenbaues in den letzten 30 Jahren). Karl Pichelmayer. Refinements in motors, generators, etc., and their sponsors. 4400 w. Elek u Masch (Special)—March, 1913. No. 41485 D.

Developments in Electrical Measuring Devices (Die Entwicklung der elektrotechnischen Messkunde). E. Orlich. E. Orlich.

POWER APPLICATIONS.

Industrial

Units of resistance, intensity and capacity, galvanometers, dynamometers. photometry, etc. 4800 w. Elek u Masch (Special)—March, 1913. No. 41489 D. Developments in the Electric Motor

Developments in the Electric Motor Drive (Die Entwicklung der elektrischen Motorantriebe). F. Niethammer. The men prominent in pioneer work of this nature, and the lines of their efforts. 4000 w. Elek u Masch (Special)—March, 1913. No. 41492 D.

Electric Vehicles

See same heading under MECHANICAL ENGINEERING, Automobiles.

Elevators

The Prevention of Accidents in Electric Lifts. Explains the conditions and the means adopted to secure safety. 1800 w. Elec Rev, Lond—April 18, 1913. No. 41752 A.

Factories

Notes on a Factory Installation. E. P. Austin. Deals with the distribution, and considers the electromechanical details that belong to the driving of girder-working machines. 2000 w. Elec Rev, Lond —Nov. 8, 1912. No. 37632 A.

Electricity in Shoe Factories. H. O. Stewart. Explains the advantages of central-station service, and gives information concerning applications, etc. Ills. 3000 w. Elec Rev & W Elect'n—Dec. 7, 1912. No. 38095.

Electricity in Soap Manufacture. Gives data on selection of proper motors, advantages of motor drive, etc. Ills. 2500 w. Elec Rev & W Elect'n—July 12, 1913. No. 43677.

Electricity in Broom Manufacturing. Discusses conditions in a typical plant and gives data on other plants. Ills. 2500 w. Elec Rev & W Elect'n—July 5, 1913. No. 43472.

Electricity in Piano Factories. States some of the advantages of electric motor drive and gives data. Ills. 2500 w. Elec Rev & W Elect'n—Aug. 9, 1913. No. 44268.

Electrical Installation at a French Iron Works. Dr. Alfred Gradenwitz. Illustrated description of the installation of the Soc. Anon. des Usines de l'Espérance, of Louvroil. 2000 w. Elec Rev, Lond—Sept. 12, 1913. No. 45285 A.

Electricity in Automobile Manufacturing. Gives data on operating features and horse-power requirements. Ills. 4000 w. Elec Rev & W Elect'n—Sept. 20, 1913.

Serial, 1st part. No. 45254.

Electricity in the Manufacture of Trunks and Suit Cases. Discusses the advantages and power requirements of the various machines used. Ills. 2000

w. Elec Rev & W Elect'n—Sept. 13, 1913. No. 45113.

Electricity in a Modern Shoe Factory. Illustrated description of the equipment at the Keith shoe factory, South Boston. 2500 w. Elec Rev & W Elect'n—Aug. 30, 1913. No. 44875.

Fans

The Electric Ceiling Fan. H. S. Baldwin. Some of the recent forms are described and illustrated. 1200 w. Gen. Elec Rev—May, 1913. No. 41812 C.

Foundries

Application of Electric Power in the Foundry. H. F. Stratton. Explains how the use of motor-driven equipment effects economies in casting plants. Ills. 4000 w. Foundry—Oct., 1913. Special. No. 45705 C.

Greenhouses

Application of Electric Drive in Greenhouses. Illustrates and describes the extensive use of motors in a large floral establishment near Chicago. 2500 w. Elec Wid—Oct. 25, 1913. No. 46202.

Heaters

Materials Used in Electrical Heaters. H. O. Swoboda. Considers electrical conductors, thermal conductors, and electrical and thermal insulators. 1800 w. Electron.—May. 1913. No. 42434.

Jour—May, 1913. No. 42434.

Introduction to Discussion on Electric Heating and Cooking. T. Roles. Abstract of a discussion held at Leeds and Sheffield. 3500 w. Elect'n, Lond—April 28, 1913. No. 41754 A.

Hotels

Electrical Equipment of a Modern Hotel. Illustrated description of the lighting scheme in the McAlpin Hotel, New York, and the system of control of electric circuits to insure continuous service. 2500 w. Elec Wld—May 3, 1913. No. 41881.

Hotel Service

Electricity in Hotel Service. The present article deals with power applications. Ills. 3000 w. Elec Rev & W Elect'n—Dec. 14, 1912. Serial. 1st part. No. 38206.

Industrial

Electricity in Shoe Repairing. Discusses conditions in this industry, the horsepower requirements of the machines used, costs, etc. Ills. 2000 w. Elected W Elect'n—April 12, 1913. No. 41203.

The Engineering and Commercial Status of Current Consuming Devices. Discusses the demand, industrial applications of motors, control, etc. Ills. 4500 w. Elec Engng—April, 1913. No. 41328.

Electricity in Wire-Fence Manufacture. Discusses the advantages of cen-

Industrial

POWER APPLICATIONS

Packing Houses

tral-station service, the machine and motor characteristics and gives operating data on several typical plants. Ills. 3000 w. Elec Rev & W Elect'n—April 5, 1913. No. 41102.

Electricity in Bottling Works. Illustrated article discussing the possibility of central station power in this industry. 3000 w. Elec Rev & W Elect'n—April 19, 1913. No. 41364.

Electricity in the Ceramic Industry (Elektrizität in der keramischen Industrie). Kurt Porsch. Uses in the manufacture of stone ware, porcelain, tile pipes, terra cotta, and cement. Ills. 4900 w. Elek Kraft u Bahnen—Mar. 4, 1913. No. 41499 D.

Electrical Equipment of Industrial Plants. Harry C. Spillman. Illustrated description of the illumination, motor requirements and telephone call system of the Continental Motor Mfg. Co., Detroit, Mich. 1700 w. Elec Wld—May 24, 1913.

No. 42389.

Electricity in Coffee and Spice Mills. Illustrate description of a Chicago plant, with tabulated data of typical plants. 2000 w. Elec Rev & W Elect'n—May 17, 1913. No. 42224.

Electricity in Packing Plants. formation and data relating to plants using electric power. Ills. 2400 w. Elec Rev & W Elect'n—May 24, 1913. No. 42386.

Electricity in Harness Manufacture. Gives data on several typical plants using central station power. Ills. 2000 ing central station power. Ils. 2000 w. Elec Rev & W Elect'n—Oct. 25, 1913. No. 46236.

Electricity in Glass Plants. Discusses the advantages of motor drive applied to glass manufacturing, with detailed data on typical plants. 2500 w. Elec Rev & W Elect'n—Oct. 18, 1913. No. 45957.

Jewelry

Electricity in Jewelry Manufacturing. Detailed analysis of operating costs in a typical converted plant with data on a number of installations. Ills. 1800 w. Elec Rev & W Elect'n-Aug. 16, 1913. No. 44410.

Logging

Electric Logging in the West. Wirt S. Scott. States the principal advantages obtained by the use of motors, and out-

lines the methods used. Ills. 3000 w. Elec Jour—Sept., 1913. No. 45101.

Logging by Electricity. E. J. Barry. Illustrates and describes the electric logging engines installed in a timber district in Idaho, and gives the results of tests of these machines. 1500 w. Pro Am Inst of Elec Engrs-Sept., 1913. 45516 F.

Lumber Industry.

Lumbering by Electricity in the Northwest. Ira E. Church. Discusses the upkeep of three electric mills. Ills. 3000 w. Elec Jour-March, 1913. No. 40869.

Lumber Mills

Lumbering, Planing-mill Practice and Electricity in the Northwest. Ira E. Church. Illustrates and describes applications of electricity and the advantages. 3500 w. Wood Craft—April, 1913. No. 41084.

Marine

See Electric Power, under MARINE AND NAVAL ENGINEERING.

Medical

Electro-Medicine. — Electro-Pathology (Elektromedizin. — Elektropathologie).
Dr. S. Jellinek. The medical uses of electricity, and electrical accidents. 6400 w. Elek u Masch (Special)—March, 1913. No. 41498 D.

Mills

Electrical Equipment of the Pacific Mills New Print Works Department. Theodore A. Bergen. Illustrated description of the generating plant, motor installation and alternating current distributing system. 2500 w. Elec Rev & W. Elect'n-June 21, 1913. Serial, 1st part. No. 43120.

Electricity in Button Manufacture. Detailed conditions in typical plants are discussed. Ills. 2000 w. Elec Rev & W. Elect'n—June 21, 1913. No. 43119. Electricity in Knitting Mills. Dis-

cusses the advantages that apply to knitting mills, giving operating data on a number of plants. Ills. 3000 w. Elec Rev & W Elect'n—June 14, 1913. No.

See Electric Power, under MINING AND METALLURGY, Iron and Steel.

See Electric Power, under MINING AND METALLURGY, Coal and Coke, Copper, Iron and Steel, and Lead and Zinc.

See Electric Hoists, under MINING AND METALLURGY, Mining.

New Business

New Applications of Electricity as an Adjunct to New Business. F. C. Caldwell. Read before the Ohio Elec. Lgt. Assn. Considers applications of heating, power, and other uses. 3500 w. Elec Rev & W Elect'n—July 26, 1913. No. 43925.

Packing Houses.

Electricity in the Packing Industry. W. D. Bearce. Illustrates and describes applications made by the different companies. 4000 w. 1913. No. 40258. Elec Wld-March 1,

Panama Canal

POWER APPLICATIONS

Woolworth Building

Panama Canal

See same heading, under CIVIL ENGI-NEERING, Waterways and Harbors.

Post Office

New Terminal Post-Office in New York. L. B. Marks and J. E. Woodwell. trated description of the electrical and mechanical equipment, wiring and illumination of the government building over the Pennsylvania R. R. yards. 2000 Elec Wld—Jan. 4, 1912. art. No. 38832. Serial. 1st part.

Potteries

Electricity Supply in the Potteries. Illustrated description of the new power station at Stoke-on-Trent and the plant installed. 2500 w. Elec Rev, Lond—April_11, 1913. No. 41376 A.

Power Requirements

Electrical Requirements of Certain Machines in the Rubber Industry. C. A. Outlines the principal operations carried on in a rubber factory and gives figures on the power requirements. Ills. 2200 w. Pro Am Inst of Elec Engrs—July, 1913. No. 43343 F.

Printing

Power Economics in a Printing Plant. Gives facts and figures from a report investigating the cost of electricity and of the operating conditions in an eastern printing plant. 2200 w. Elec Rev & W Elect'n—May 24, 1913. No. 42387.

Quarries

Electrical Equipment and Operation of Limestone Quarries. John Liston. Outlines the system adopted at Calcite, Mich. Ills. 3500 w. Gen Elec Rev-Feb., 1913. No. 39618 C.

Electric Power for Quarries, Gravel Plants and Contract Work. From the report of the Committee on Electricity in Rural Districts presented at meeting of the Nat. Elec. Lgt. Assn. at Chicago. 2000 Eng News-June 19, 1913. 42983.

Salt Mining

Electricity in Salt Mines. Discusses the advantages of electric drive and gives data on several installations. 1600 w. Elec Rev & W Elect'n-Oct. 4, 1913. No. 45679.

Shovels

Electrically Operated Shovels. Discusses the advantages of electric over steam shovels, giving comparative cost data. 2000 w. Elec Rev & W Elect'n data. 2000 w. Elec Rev July 26, 1913. No. 43924.

Steel Plants

Electrically Operated Armour-Plate Rolling Mill at Witkowitz. J. Gutmann. From Stahl und Eisen. Illustrated detailed description. 1500 w. Ir & Coal Trds Rev—Dec. 6, 1912. No. 38258 A. Electricity at the Shelton Iron Co.'s

Works. Illustrated review of the most recent development in the progress of the electrification of the plant. 3000 w. Elec Rev, Lond—Dec. 6, 1912. No. 38234 A.

Electrical Equipment of a Department Store. Illustrated description of the lighting and motor service installed in the Filene establishment, Boston. 4000 w. Elec Wld—Sept. 20, 1913. No. 45256.

Subways

Utilizing Electrical Energy in the Construction of Subway at Boston. trates and describes machines and methods used in building an important addition to the underground line. 2500 w. Elec Wld—Jan. 4, 1913. No. 38833. Sugar Making

Electricity Applied to the Manufacture Sugar. P. S. Smith. Outlines the of Sugar. processes followed and discusses the suitability of the electric drive for operating the various machines. Ills. 1200 w. Gen Elec Rev-Aug., 1918. No. 44087 C.

Fanneries

Electric Power for Tanneries. Reports successful installations. Tomb. giving data on the application of motors to this work. Ills. 1800 w. Elec Jour -Nov., 1912. No. 37887.

Textile

Electricity in Knitting Mills. trated description of applications with operating data on a number of installations. 3000 w. Elec Rev & W Elect'n —Nov. 30, 1912. No. 37952.

See same heading, under CIVIL ENGI-NEERING, Waterways and Harbors.

See same heading, under MECHANICAL ENGINEERING, Machine Works and Foundries.

Wood Working

Power Analysis of a Veneer Plant. C. W. Drake. Brief illustrated description of the application of electric motor drive to such plants. 1000 w. Elec Jour-June, 1913. No. 48227.

Electrically Driven Wood-Working Machines (Elektrisch angetriebene Holzbearbeitungs-maschinen). O. Pollok. New German machinery for sawing, boring, planing and turning wood. Ills. Serial, 1st part. 1600 w. Zeit für Werkzeng— May 25, 1913. No. 43031 D.

Woolworth Building
The World's Highest Office Building. Charles E. Knox. Illustrates and describes the elevator equipment, safety features, generating plant and wiring of the Woolworth Building, New York City. 3300 w. Elec Wld-July 19, 1918. No. 43840.

Accidents

TRANSMISSION

Cables

Accidents

See Electric Power, under MINING AND METALLURGY, Mining.

Alternating Current

Earthed v. Unearthed Neutrals on Alternating-Current Systems. J. S. Peck. Abstract of a paper read before the Inst. of Elec. Engrs. Discusses the question from the point of view of generating plant, high-voltage transmission circuits and low-voltage distribution circuits. 3000 w. Elect'n, Lond—Nov. 29, 1912. No. 38113 A.

Aluminum

Aluminium in Mining Electrical Engineering. J. D. Paton. Abstract of a paper read before the Assn. of Min. Elec. Engrs. Gives extracts from specifications for aluminium stranded wire, suitable for aerial electric power transmission, and information concerning uses made in applications. 2500 w. Ir & Coal Trds Rev—April 4, 1913. No. 41250 A.

Arcing Ground Suppressor.

The Arcing Ground Suppressor, and Its Applications. R. H. Marvin. Deals with this apparatus and its uses, its advantages and limitations. Ills. 2000 w. Gen Elec Rev—March, 1913. No. 40250 C.

Arresters

The Charging of Aluminum Lightning Arresters. E. E. F. Creighton. This first of three articles reviews briefly the principal characteristics of the aluminum arrester, and discusses the advantages resulting from the use of charging resistances. 7500 w. Gen Elec Rev—April, 1913. Serial. 1st part. No. 40991 C.

Interesting Facts Concerning the Horn Gap. A. W. Burke. Brief descriptions of some of the more important types. Ills. 2000 w. Elec Jour—June, 1918.

No. 43222.

Artificial Lines
A Convenient Form of Continuous-Current Artificial Line. A. E. Kennelly. Illustrates and describes a simple form constructed of simple series and shunt resistances. 1100 w. Elec Wld—June 14, 1913. No. 42843.

Atmospheric Phenomena

Atmospheric Electricity (Elettricita Atmosferica). Oreste Murani. A study of the phenomena observed in clear weather, thunder storms, St. Elmo's fire, polar auroras, etc. Ills. Serial. 1st part. 4400 w. Industria—April 27, 1913. No. 42502 D.

Atmospheric Phenomena and the Disturbances which They Engender in Electric Systems (Les Phénomènes atmosphériques et les Perturbations qu'ils engendrent dans les Réseaux électriques).
G. Capart. Damages effected by light-

ning, wind, rain, snow, etc., and rules for protection. Ills. 8000 w. Soc Belge des Elec—May, 1913. No. 43551 E.

Atmospheric Phenomena and the Disturbance Created by Them in Electric Distributing Methods (Die atmosphärischen Erscheinungen und die Störungen welche durch dieselben in den elektrischen Verteilungsnetzen hervorgerufen werden) G. Capart. A review of the list of damages caused by rain, hail, snow, lightning, etc. Ills. Serial. 1st part. 3200 w. Elek u Masch—Sept. 14, 1913. No. 46080 D.

Balancers

Direct-Current Balancer Sets. A. C. Lanier. Describes methods employed to maintain voltage balance in the direct-current multi-wire circuits. 5500 w. Elec Jour—Nov., 1912. No. 87891.

Cables

The Protective Covering of Rubber Cables. F. Fernie. Brief discussion of the braiding and various troubles with rubber cables. 1000 w. Elect'n, Lond-Nov. 29, 1912. No. 38116 A.

Polyphase Cables for 30000 Volts. W. Pfannkuch. Abstract of a paper read before the Elektrotechnische Verein. Describes the testing arrangements and tests made of this cable. 1300 w. Elect'n, Lond—Jan. 17, 1913. No.

39460 À.

Comparative Calculations on High Tension Cables (Vergleichende Rechnungen an Hochspannungskabeln). Calculations on ten-, twenty- and thirty-thousand volt cables with results obtained by G. Roessler in his book, "Fernleitung von Wechselstromen." 4800 w. Elek u Masch—Dec. 15, 1912. No. 39052 D. The Testing of Cables by Direct Current. J. Delon and L. Lichtenstein. Abstract of an article in Elek. Zeit. Description.

The Testing of Cables by Direct Current. J. Delon and L. Lichtenstein. Abstract of an article in *Elek. Zeit*. Describes an apparatus devised in the laboratory of the Soc. Française des Cables Electriques, at Lyons, and used in a large number of important net works. 1600 w. Elect'n, Lond—March 14, 1913. No. 40809 A.

A 60000-Volt Underground Cable Installation. From a paper by Dr. Leon Lichtenstein. Describes an installation for supplying single-phase power to the Dessau-Bitterfeld railway. 1700 w. Elec Rev, Lond—March 7, 1913. No. 40701 A.

Electric Cables for Shafts of Mines. E. Kilburn Scott. Read before the London Branch of the Assn. of Min. Elec. Engrs. Discusses the installation of such cables, the conductors, jointing, insulation, etc. Ills. 6000 w. Ir & Coal Trds

TRANSMISSION

Corona

Rev-March 7, 1913. Serial. 1st part. No. 40635 A.

Cable Jointing and Junction Boxes, etc. Chris. Jones. Read before the Assn. of Min. Elec. Engrs. Illustrates and describes methods of making joints and sealing terminal ends in various kinds of cables. 3500 w. Ir & Coal Trds Rev—April 4, 1913. Serial. 1st part. No. 41248 A.

High-Tension Cables on the Railway Between Dessau and Bitterfeld. Dr. L. Lichtenstein. Abstract from Elektrotechnische Zeit. Information concerning the construction, laying, and testing of the 60,000-volt cables. 2500 w. Elect'n, Lond—April 4, 1913. No. 41224 A.

Insulated and Bare Copper and Aluminum Cables for the Transmission of Electrical Energy, with Special Reference to Mining Work. Burkewood Welbourn. Abstract of a paper read before the Inst of Min Engrs. Information concerning their use, cost, service, &c. Ills. 5500 w. Ir & Coal Trds Rev—June 6, 1913. No. 42898 A.

Cable Laying and Records. Shows the necessity of employing some system in laying cables and of recording on suitable maps. 1200 w. Elec Rev, Lond—July 18, 1913. No. 43951 A.

The Laying of Alternate Current Mains in Iron Pipes. L. Bloch. Abstract of a paper read before the Electrotechnische Verein. A report of investigations made in Berlin with statement of results. 1200 Elect'n, Lond-July 4, 1913.

On the Temperature Rise and Deterioration of the Covering Material of Wire by the Carrying Current. G. T. Hirobe. Abstract of report No. 12 of the Electrotechnical Laboratory, Tokio, Japan. Report of investigations. 1000 w. Elect'n, Lond—Aug. 22, 1913. No. 44904 A.

The Heating of Cables Carrying Current. Saul Dushman. Discusses methods of calculating the rates of heating and cooling insulated cables and the current carrying capacity. 3500 w. Pro Am Inst of Elec Engrs—Feb., 1913. No. 40178 F. Current Rating of Electric Cables.

Ralph W. Atkinson and H. W. Fisher. A discussion of the current carrying capacity of electric power cables. 1000 w. Pro Am Inst of Elec Engrs—Feb., 1913. No. 40205 F.

See also Conduits, under Transmission, and Submarine Cables, under Communication.

Condensers

Protection of Excess Voltages against Atmospheric Discharges with Special Attention to Condensers (Ueberspann-

ungsschutz gegen atmosphärische Entladungen in besonderer Berücksichtigung der Kondensatoren) P. Lang. The preparation of formulæ for studying the capacity of condensers and methods of mounting them. Ills. 2000 w. Elek u Masch—Aug. 24, 1913. No. 46075 D.

Conductors.

Some Practical Considerations in Computing Conductors for Electric Circuits. Anthony Gorman. Considers important factors in determining the size of wires for distribution of electricity. 2000 w. Elec Rev & W Elect'n—March 8, 1913.

Ice Coating on Overhead Conductors. William R. King. Gives a theory based on a destructive ice storm in Portland, Oregon. Ills. 1500 w. Eng Rec-March

8, 1913. No. 40372. Conduits.

Discussion on "Notes on Underground Conduits and Cables." Paper by C. T. Moseman as discussed at Boston, Mass., May 15, 1912. 10500 w. Pro Am Inst of Elec Engre—March, 1913. No. 40445 F.

The Manufacture of Electrical Conduit from a Chemical Engineering Standpoint.
Oliver W. Storey. Explains the requirements and how they are met. 1200 w.
Wis Engr—Jan., 1913. No. 40848 C.
Underground Electric Cable Systems

from 30,000 to 60,000 Volts (Réseaux de cables électriques souterrains à 30,000 et 60,000 volts). Description of several such systems on the Continent and in England. Diagrams. 2000 w. Civil—Feb. 15, 1913. No. 40594 D. 2000 w.

Iron Pipe Used for Electric Conduit. Oliver W. Storey. Describes the various methods of treatment to increase the resistance of the pipe to corrosive action, and their comparative durability.
7000 w. Met & Chem Engng—April,
1913. No. 41044 C.
Conduit Laying, Then and Now. Deals
with types of conduit used during the last

15 years, the method of laying, etc. 1500 w. Elec Rev, Lond-July 18, 1913. No. 43952 A.

Converters

Mercury Vapor Converters. Maurice Leblanc, Jr. Deals with the principles of mercury vapor converters and their capacity and efficiency. Describes the operation and uses. Ills. 4500 w. Elect'n, Lond-July 18, 1913. No. 43953 A.

Corona

Corona Phenomena on Transmission Lines. Dr. Weidig and Herr Jaensch. Abstract of a report to the Verband Deutscher Elektrotechniker. A summary of work in this field. 2200 w. Elect'n, Lond—Oct. 10, 1913. No. 45970 A.

Experiments on Corona Losses in

Detectors

TRANSMISSION

Insulation

Dr. Weidig and Transmission Lines. Herr Jaensch. Abstract of paper read before the Verband Deutscher Elektro-techniker. Illustrated report of experi-mental work. 3300 w. Elect'n, Lond mental work. 3300 w. Ele Oct. 10, 1913. No. 45969 A.

nd Detectors. R. L. Mossman. diagrams showing the various Ground Detectors. methods of connecting lamps and voltmeters as ground detectors, also the electrostatic detector as used on high-voltage alternating-current circuits. 800 Power-Jan. 7, 1913. No. 38841.

Earthing

Practical Points in Connection with arthing. Ralph R. Smith. Describes Earthing. practical details adapted by the writer and gives an account of some tests made. Ills. 1800 w. Ir & Coal Trds Rev— Dec. 6, 1912. No. 38257 A.

Practical Notes on Earthing Factory Apparatus. E. P. Austin. Considers points requiring attention in an earthing system, and its importance. 1200 w. Elec Rev, Lond-March 14, 1913. No.

On the Use of Transformers with Mesh-Connected Secondaries for Earthing Three Phase Systems. G. W. O. Howe. Shows the principle involved and gives formulæ by means of which the currents can be calculated, or a suitable transformer chosen. 1500 w. Elect'n, Lond—May 23, 1913. No. 42741 A.

The Grounding of Transmission Lines. Charles P. Steinmetz. Considers a few typical cases to support arguments as to which system is preferable—a system with a grounded neutral, or an isolated system. 2200 w. Gen. Elec. Rev—June, 1913. No. 42584 C.

Grounding

Notes on Grounding of Electrical Systems. H. P. Liversidge. Slightly condensed paper read at the convention of the Int. Assn. of Munic. Elect'ns. Discusses the methods which have proved most effective. 3000 w. Elec Rev & W Elect'n—Aug. 30, 1913. No. 44876.

The Unbalancing Effect of Grounds. R. S. Brown. Gives equations deduced by the application of the law which holds for parallel linear charges, the charges in this case being assumed to be concentrated along the axis of the conductor. 1000 w. Elec Rev & W Elect'n—Aug. 16, 1913. No. 44413.

High Tension

International Scandinavian Transmission System. Detailed description of an interesting project for long distance transmission from Trollhättan to Copenhagen. Also editorial. 3500 Wld—Feb. 8, 1913. No. 39750 3500 w.

Heavy Current Practice on Both Sides of the Atlantic (Aus der Starkstromtechnik jenseits und diesseits des Ozeans). F. First instalment reviews Niethammer. opportunities for electrical students, and the manufacture of electrical machines in America. Ills. Serial 1st part. 5200 w. Elek u Masch—Jan 5, 1913. No. 40056 D.

140000-Volt Electric Transmission Line. Illustrated description of this high tension line in eastern Michigan. 3000 w. Engr, Lond—April 4, 1913. Serial. 1st part. No. 41245 A.

High Tension Electrical Distribution of 100,000 Volts or More in the United States (Les distributions d'électricité à tension supérieure à 100,000 volts, aux Etats-Unis). A list of companies, with brief sketches of each, and the lightning arresters, conductors, insulators and fire protectors used. 2700 w. Genie Civil— Sept. 6, 1913. No. 45358 D.

High-Tension Lines

The Measurement of Line Sag and Wire Sections as well as the Determination of Line Tension in High-Tension Aerials with Reference to the Rules of the Prussian Imperial Railways (Drahtdurchhang- und Querschnittsbemessung sowie Bestimmung der Montagezüge für Hochspannungsfreileitungen unter Berücksichtigung der Berechnungsvorschriften der Kgl. Preuss. Staatsbahnen). P. Gesing. Formulæ to be used in following these rules. 2400 w. Elek Kraft u Bahnen—July 14, 1913. No. 44680 D.

High Voltage The Operation of High-Voltage Power Systems. H. H. Dewey. Discusses economical voltage regulation. 2500 w. Gen

Elec Rev—June, 1918. No. 42581 C. Circuit-Connections in High-Voltage Systems. R. E. Argersinger. Recommends that all generators be paralleled on a common bus, properly sectionalized by disconnecting switches, and, in the lar-ger stations, by the insertion of current-limiting reactances. 2000 w. Gen Elec Rev.—June, 1913. No. 42582 C.

Influence of Load Variation on the Volt-Drop in High-Tension (Einfluss der Belastungsänderung auf den Spannungsabfall bei Hochspannungs-Freileitungen). Karl Meller. A discussion of this action with diagrams. 2000 Elek u Masch—May 11, 1913. No. 43039 D.

Insulation

Temperature and Electrical Insulation. C. P. Steinmetz and B. G. Lamme. Discusses the durability of insulation, classes of insulation, temperatures and flow of heat, measurement of temperature, with

Leekage

recommendations. 3500 w. Pro Am Inst of Elec Engrs—Feb., 1913. No. 40174 F.

Junction Boxes or the Like, with Constant Insulation of High Value, for Low-Tension Current Installation. A. Ebeling and R. Deibel. Illustrated explanation of the application of a new principle by which good insulation values may be guaranteed 2200 w. Electr'n, Lond-Jan. 24, 1913. No. 39775 A.

The Application of a Theorem of Electrostatics to Insulation Problems. C. Fortescue. Aims to emphasize a principle of electrostatic theory by which the individual units of a system of conductors may be arranged to protect one another. Ills. 4000 w. Pro Am Inst of Elec Engrs—March, 1913. No. 40444 F.

Air as an Insulator When in the Presence of Insulating Bodies of Higher Specific Inductive Capacity. C. L. Fortescue and S. W. Farnsworth. Shows the conditions which determine the disruptive strength of an air path along the surface of a solid dielectric of higher specific inductive capacity, and what steps must be taken to insure the most efficient use of the two dielectrics in combination. Ills. 2800 w. Pro Am Inst of Elec Engrs-March, 1913. No. 40443 F.

Notes on the Testing of Ebonite for Electrical Purposes. C. C. Paterson, E. H. Rayner, and A. Kinnes. Abstract of a paper presented to the Inst. of Elec. Engrs. Discusses methods and results of tests made on known qualities of rubber, with and without adulterants. A specification is suggested for tests on sheet ebonite. 2500 w. Elect'n, Lond— March 7, 1913. No. 40703 A.

Qualifications and Tests of Insulating Materials (Qualification et essais des matières isolantes). E.-J. Brunswick. Detailed specifications covering mechanical properties, heat action, and chemical properties, and the researches by the Physikalisch - Technisch Reichsanstalt. Ills. 9600 w. Tech Mod-Mar. 1, 1913. No. 40602 D.

Suspended Insulators and Protective Insulation in High Tension Systems (Die Hängeisolatoren und die Sicherheit der Isolation von Hochspannungsleitungen). Egon E. Seefehlner. Characteristic types of suspension insulators. Ills. 4400 w. Elek u Masch — Feb. 23, 1913. No. 40572 D.

See also Voltage, under Measurement.

Comparative Tests on High-Tension Suspension Insulators. P. W. Sothman. Gives an account of work in connection with the selection of a suitable, high-tension isulator for a transmission line operated at 110,000 volts. Ills. 8500 w. Pro Am Inst of Elec Engrs-Dec., 1912. No. 38510 F.

High Frequency Tests of Line Insulators. L. E. Imlay and Percy H. Thomas Presents suggestive high frequency insulator tests recently made by the authors, undertaken to determine the availability of a certain insulator for use on a projected 88000-volt line. 6500 w. Pro Am Inst of Elec Engrs—Dec., 1912. 38511 F.

Discussion on "High-Frequency Tests of Line Insulators (Imlay and Thomas), and "Comparative Tests on High-Tension Suspension Insulators" (Lothman), New York, Dec. 13, 1912. Ills. 21000 w. Pro Am Inst of Elec Engrs—April, 1913. No. 41673 F.

High Tension Insulator Tests. A Study of Design Factors. F. F. Brand. Comments on the proper manner of conducting such tests, with a discussion of the potential gradient on two of the common forms of insulators, the pin and Gen Elec suspension types. 4000 w. C. Rev—April, 1913. No. 40985 C.

Suspension Insulators Suitable for 110000-volt Transmission. Joseph B. Baker. Illustrated description of tests, showing the weaknesses of standard types. 2000 w. Sci Am—April 5, 1913. types. 200 No. 41041.

The Uses of Artificial Insulating Materials in the Construction of Electrical Apparatus. H. Passavant. Abstract of a paper before the Elektrotechnische Verein. States the most essential prop-erties of insulating material, and dis-cusses points arising in an investigation made. 1700 w. Elect'n, Lond—May 9,

made. 1700 w. Elect'n, Lond—May 9, 1913. No. 42276 A.

Discussion on "Air as an Insulator When in the Presence of Insulating Bodies of Higher Specific Inductive Capacity" (Fortescue and Farnsworth), and "The Application of a Theorem of Electrostatics" (Fortescue). New York, trostatics" (Fortescue), York, New

March 14, 1913. 9500 w. Pro Am Inst of Elec Engrs. May, 1913. No. 42455 F. Baking of Insulating Varnishes. H. W. Turner and H. D. Symons. Read before the Assn. of Min. Elec. Engrs. Considers insulation of mining electrical ma-chinery. Ills. 2500 w. Ir. & Coal Trds Rev—May 2, 1913. No. 42255 A.

Insulators for High Tension Lines above 5000 Volts (Isolatoren für hohe Spannungen von über 5000 V.) A. Martin-Saxton. Determinations of the form and size of insulators and the methods of testing. Ills. 3200 w. Elek u Masch -Aug. 24, 1913. No. 46074 D.

Some Methods of Detecting Leakages

Lightning

TRANSMISSION

Line Records

on Alternating and Continuous-Current-Systems. R. D. Gifford. Illustrates and describes some detectors and recording instruments for use on electrical power circuits. 1200 w. Elec Rev, Lond—June 20, 1913. No. 43369 A.

Electrolytic Detector without Auxiliary Electromotive Force (Détecteur électrolytique sans force électromotrice auxili-are). P. Jégon. Describes a new device using an amalgam of mercury and zinc as one anode. Ills. 1400 w. Bull Soc Int d Electriciens—June, 1913. No. 43570 F.

Lightning

Lightning-Prints. Charles Fitzhugh Talman. Illustrates and describes forms. 1700 w. Sci Am—June 28, 1913. No.

Lightning Arresters.

Some Incorrect Methods of Testing Multigap Lightning Arresters. E. E. F. Creighton. Relates tests that have been inappropriately applied to multigap arresters, and explains wherein they are wrong. 2000 w. Gen Elec Rev—March, 1913. No. 40249 C.

European vs. American Practice in Lightning Arresters. E. E. F. Creighton. Compares several forms of arresters used in Europe and not in America. Ills. 4500 w. Gen Elec Rev-Aug., 1913. No. 44092 C.

Electrolytic Lightning Arresters. C. Dill. Explains the vital properties of the electrolytic arrester, describing its construction, and giving suggestions in regard to their installation, care, etc. Ills. 4500 w. Elec Jour—Aug., 1913. No. 44594.

Aluminum-Cell Lightning Arresters. John A. Randolph. Illustrates and describes this type, used extensively on high-voltage systems, explaining its action. 2000 w. Power—Sept. 9, 1913. No. 45014.

Lightning Protection

Lightning Protection of Buildings. Ernst J. Berg. Address at convention of Illinois State Elec. Assn. Information based on experience of investigators. 3000 ₩. Elec Rev & W Elect'n-Nov. 16, 1912. No. 37595.

Line Capacity
Calculating the Motive Capacity and
Current Losses in High Tension Three-Phase Aerials. (Ueber die Berechnung der Betriebskapazität und des Stromab-Hochspannungs-Drehstrombei freileitungen). G. P. Markovitch. A series of formulæ and their explanation. Diagrams. Serial, 1st part. 5200 w. Elek u Masch—June 22, 1913. No. 43542 D.

Formulas for Capacity of Single-Phase Transmission Lines and Cables. C. A. Pierce and F. J. Adams. Deduces formulas, giving particular attention to the underlying assumptions and to the accuracy which may be expected. 4000 w. Elec Wld—Aug. 16, 1913. No. 44417.

Line Design

Laying-Out Angles in Transmission Lines. Describes three simple methods for the determination of line angles, requiring only bare poles and a 50-ft. measuring tape. 1000 w. Elec Rev, Lond-Nov. 15, 1912. No. 37807 A.
Transmission Line Design. Julian C.

Smith. Discusses present practice in the design of large systems. Ills. 2500 w. Sib Jour of Engng—Nov., 1912. No.

37536 C.

Sight Calculations of Aerial Lines (Calcul a vue des lignes aériennes). L. Graphical methods of overhead line design by the use of the Blondel nomogram system. Diagram. 4800 Tech Mod—Oct. 15, 1912. No. 37508 D. 4800 w.

Pressure Drop in Alternating-Current nes. M. J. Eichhorn. Explains a method for conveniently and rapidly calculating the pressure drop in a. c. transmission lines. 1500 w. Elec Rev & W Elect'n—Jan. 11, 1913. No. 38979.

Some Problems in Traction Develop-

ment—Tramway Feeding Networks. G. Cunliffe and R. G. Cunliffe. A gestive treatment of the modifications becoming necessary in the design of the feeding networks and in the legislative limitations imposed. Considers the use Elect'n Londof boosters. 2500 w. Dec. 27, 1912. No. 38912 A.

Network Problems (Zur Netzspaltung). Josef Herzog. Discussion on the problems of current and tension distribution. Diagrams. Serial, 1st part. 4000 w. Elek u Masch — Feb. 16, 1913. No. 40571 D.

Line Losses Discussion on "Corona Losses Between Wires at High Voltages" (Harding), "The Law of Corona and Dielectric Strength of Law of Corona and Dielectric Strength of Air" (Peck), and "The Electric Strength of Air" (Whitehead), Boston Mass., June 25, 1912. 4000 w. Pro Am Inst of Elec Engrs—Nov., 1912. No. 37903 F. The Calculation of Transmission Line Losses. N. E. Funk. Explains a simple,

rapid, accurate method of calculation, and may be done on a slide rule. 4500 w. Elec Engng-June, 1913. No. 42725.

Line Records

Distribution Line Records. H. A. Holmes. Outlines a system which will enable information to be obtained immediately. Maps. 1000 w. Elec Wld—

Line Spans

Lines

Aug. 9, 1913. Serial, 1st part. No. 44274.

Lines.

Important Calculations for Wood Pole Transmission Lines. W. T. Ryan. Discusses calculations involved in the consideration of the transmission line as a mechanical structure. 4000 w. Elect'n-March, 1913. No. 40651.

Surges, Standing and Traveling Waves on Overhead Transmission Lines. fred Still. Discusses the relations existing between the inductance and capacity of the circuit. 2200 w. Elec Wld—April 12, 1913. No. 41192.

Accessories in Long-Distance Electric Transmission (Roles de la canalisation dans les transports électriques à longue distance). M. J. Grosselin. A compara-tive study of overhead and underground lines; poles, insulators, conduits, etc. Ills. 7200 w. Mem Soc Ing Civ de France— Jan., 1913. No. 42168 G.

A Graphical Method for the Calculation of Short Transmission Lines. Fredrik Waern. Gives a chart and explanation of its use. 800 w. Gen Elec Rev-June.

1913. No. 42595 C.

Practical Calculations of Long Distance Transmission Line Characteristics. F. W. Peck, Jr. Considers regulation, efficiency, phase control of voltage, etc., discussing methods. 2500 w. Gen Elec Rev -June, 1913. No. 42593 C.

Some Mechanical Characteristsics of the Modern Transmission Line. T. A. Worcester. Discusses types of support, loads, factors of safety, arrangement of conductors, insulators, and right of way. Ills. 3000 w. Gen Elec Rev-June, 1913.

No. 42591 C.

Theory of the Non-Elastic and Elastic Catenary as Applied to Transmission Lines. C. A. Pierce, F. J. Adams, and G. I. Gilchrest. Deals with the theory of the catenary as applied to transmission lines, and experimental data are compared with the values derived by use of the theoretical equations. 3500 w. Pro Am Inst of Elec Engrs-June, 1913. No. 43212 F.

The Transmission of 60,000 Volts from Grenoble to Saint Chamond (Le transport d'énergie à 60,000 volts de Grenoble à Saint-Chamond). V. Sylvestre. General description of power house and equipment, with details of transmission towers and insulators. Ills. 9000 w. Tech Mod—July 1, 1913. No. 43581 D.

High Tension Lines of More than 100,-000 Volts in the United States (Hochspannungsanlagen von mehr als 100,-000 volt in dem Vereinigten Staaten von Amerika). E. Schwartzkopf. Descrip-

tion of nine of the largest transmission lines; the first part describing the Central Colorado Power Company's line. Ills. Serial, 1st part. 3000 w. Glaser's Ann —June 15, 1913. No. 43519 D.

Graphical Statics Applied to Transmission-Line Calculations. Alfred Still. The problem of overhead lines on steep grades is considered. 2500 w. Elec Wld-Aug. 2, 1913. No. 44147.

Mechanical Characteristics of Long Spans. A. R. Zahorsky. Reviews formulae for the calculation of sags and stresses of a conductor. 1000 w. Elec Rev & W Elect'n-Aug. 9, 1913. No.

Supplying the Isolated Consumer from the Transmission Line of Moderate Voltage. E. B. Merriam. Illustrates and describes a number of installations in successful operation. 3500 w. Gen Elec Rev-Aug., 1913. No. 44086 C.

Design of an 1180 ft. Transmission-Line Span. K. Nogami. Illustrated account of an installation in Japan, with calculations for the span across the strait of Indo Kaikyo. 1500 w. Elec Wld—Aug. 9, 1913. No. 44271.

60000-Volt Steel-Tower Line Construction in Southern California. Harry W. Dennis. Explains the reasons for the tower-line construction and describes the work. Ills. 5000 w. Elec Wld—Aug. 9, 1913. No. 44273.

Effects of Ice Loading on Transmission Lines. V. H. Greisser. A record of ex-perience and tests, describing the manner of making the tests, and showing the results graphically. Ills. 2500 w. Pro Am Inst of Elec Engrs—Sept., 1913. No. 45515 F.

Catenary Line Construction on Curves. W. Schaake. Drawings and descriptions of various forms of construction. 1000 w. Elec Jour—Oct., 1913. No. 46336.

Long Distance Transmission System of The Berlin Electric Plant. (Das Ueberder Berliner Èlektrizitätslandnetz Werke) E. Rühle. General description of the plant and network system. Ills. 1700 w. Elek Kraft u Bahnen—Sept. 4, 1913. No. 46090 D.

Line Sag

Sag in Long Spans for Transmission nes. W. T. Ryan. Gives a direct method of calculating the sag in wires in which allowance is made for all varia-Elec Rev & W Elect'n 2500 w. tions. —Jan. 18, 1913. No. 39227.

Line Spans

Diagram for Wire Spans. O. von Voigtlander. Gives a diagram to facilitate calculations, explaining its use.

Line Stresses

TRANSMISSION

Rates

1200 w. Eng News—Dec. 19, 1912. No. 38336.

Line Stresses

Stresses Produced in a Transmission Line by Breaking of a Conductor. R. S. Brown. Analysis made to determine stresses. 1200 w. Elec Wld—March 29, 1913. No. 40951.

Load Disturbances

Disturbances of Potential and Current Produced in an Active Conducting Network by the Application of a Leak Load. A. E. Kennelly. A study of the effect of applying a known leak load to any given network of direct-current or alternating-current circuits. 2500 w. Elec Wld—Dec. 28, 1912. No. 38694.

Loads

Maximum Loads of Transmission Lines. H. B. Dwight. Outlines the factors limiting the loading of a transmission line and indicates their relative importance, showing what calculations should be made in determining the proper line for a given case. 2500 w. Elec Jour—Sept., 1913. No. 45100.

Long Distance

The Thury Continuous-Current Series System, with Special Reference to Long-distance Transmission. Alfred Still. Has special reference to straight long-distance transmission at constant current. Also editorial. 3000 w. Elec Wld—Nov. 30, 1912. No. 37949.

Networks

Some of the Properties of Electric Networks (Ueber einige Eigenschaften der elektrischen Leitungsnetz). H. Frohman. Formulae and diagrams explaining some of the characteristics. 3200 w. Elek u Masch—Sept. 29, 1912. No. 37470 D.

Methods in Calculating Electric Networks (Verfahren zur Berechnung elektrischer Leitungsnetze) H. Frohmann. Mathematical discussion with diagrams. 2800 w. Elek u Masch—Sept. 28, 1913. No. 46082 D.

Outdoor Stations

Some Features of the Outdoor Electrical Installation. F. C. Green. Illustrates and describes types of outdoor stations and discusses their advantages and disadvantages. 4500 w. Pro Am Inst of Elec Engrs—Nov., 1912. No. 37896 F.

Poles

Results of Life Tests on Treated and Untreated Chestnut Poles. Explains method of treating the poles and gives results of experimental tests. 800 w. Elec Wld—Nov. 30, 1912. No. 37951.

A Rapid Method for Calculating Metal Poles (Une Méthode rapide pour le calcul des poteaux métalliques). Osc. Colard. Empirical formulæ for the bracings of metal towers. Diagrams. 2400 w. Soc. Belgs d'Elec—March, 1913. No. 42171 E.

Notes on the Calculation of Masts for Use with Suspended Insulators (Beitrag zur Mastenberechnung bei Vermendung von Hängeisolatoren). Hans Grünholz. Mathematical discussion. Ills. 2500 w. Elek u Masch—July 6, 1913. No. 44688 D.

Report of the Committee on Joint Use of Poles. Abstract of paper read before the Am Elec Ry Assn. Ills. 2000 w. Elec Ry Jour—Oct. 17, 1913. (Daily Ed.) No. 45956.

The Economical Aspects of Creosoting Processes for Wooden Transmission Poles. (Zur Frage der Wirtschaftlichkeit der Kreosotierungsverfahren für hölzerne Leitungsmaste) Robert Nowotny. The cost and life of treated poles as against the cost and life of untreated ones, with a study of the most economical treatment for best financial results. 2000 w. Elek u Masch—Sept. 7, 1913. No. 46078 D.

See also Lines, under Transmission; Reinforced Concrete and Forest Products, under CIVIL ENGINEERING, Materials of Construction.

Power Distribution

Progress in Electric Power Transmission Practice. Louis Bell. Reviews the features entering into power distribution problems with special reference to those of conversion to direct current. 2000 w. Elec Ry Jour—Jan. 4, 1913. No. 38827.

Protective Devices

Theory and Practice in Excess Voltage Protection (Theorie und Praxis des Ueberspannungsgeschutzes). E. Pfiffner. This first article discusses the mathematical theory involved. Ills. Serial. 1st part. 4000 w. Elektrotech u Maschinenbau—Nov. 17, 1912. No. 38465 D.

Practical Research for Means of Protection against Excess Voltage of Atmospheric Origin (Recherches pratiques sur les moyens de protection contre les surtensions d'origine atmospherique). A. Waeber and G. Capart. Gives results of close studies for ten years on high aerial installations. Ills. and Plate. 4800 w. Tech Mod—Dec. 1. 1912. No. 38487 D.

Tech Mod—Dec. 1, 1912. No. 38487 D.

A Classification of Protective Apparatus Used in High-Voltage Lines. V. E.
Goodwin. A résumé of all apparatus whose aim is protection against abnormal conditions of service. 1500 w. Gen Elec Rev—June, 1913. No. 42592 C.

Rate

Net Costs, Selling Price and Rate Making of Electric Power (Prix de revient, prix de vente et modes de tarification de

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Thury System

l'énergie électrique). A. and M. Villa-An examination of these three factors influencing the installation of electrical plants. Diagrams. 7200 w. Tech Mod—Dec. 15, 1912. No. 39070 D.

Relays A Highly Sensitive Relay. H. Rohmann. Trans. from *Phys. Zeit*. Describes a new arrangement which utilizes the deflection of sensitive measuring instruments, without reducing their sensitiveness. 1200 w. Elect'n, Lond—Sept. 12, 1913. No. 45289 A.

Safety Appliances

Safeguarding the Use of Electricity in Mines. H. H. Clark. Discusses the underground conditions that are unfavorable to the proper installation and maintenance of electrical equipment and suggests methods of making safer the use of electrical equipment in mines. 3000 w. Pro Am Inst of Elec Engrs—April, 1913. No. 41670 F.

See also Accidents, under Miscellany.

Safety Devices.

The Dangers from the Use of Electrical Domestic Apparatus and Proposals for an Effective Elimination of These Dangers (Die Gefahren beim Gebrauch der elektrischen Haushaltungsapparate und Vorschläge für die gründliche Be-seitigung dieser Gefahren). W. Vogel. Advocating well insulated cords and wiring for all domestic appliances. Ills. 3300 w. Elek Kraft u Bahnen—Feb. 14, 1913. No. 40566 D.

Series System

The Transmission of Electrical Energy by Continuous Current on the Series System. J. S. Highfield. Compares the series transmission system with the more usual three phase, dealing with questions of cost, earthing and design as affecting power. 7500 w. Inst of Elec Engrs—May 21, 1913. No. 42876 N.

Stray Currents

Stray Electric Currents. C. J. Norwood. Information concerning three instances where shots in mines were prematurely exploded by electric currents. 1800 w. Mines & Min—Feb., 1913. No. 39623 C.

The Question of Stray Currents and the German Earth-Current Rules (Die Frage der vagabundierenden Ströme und deutschen Erdstromvorschriften). Johannes Rautenkrantz. Description of instruments used in measuring earth voltage, resistance and intensity. Ills. 5600 w. Elek u Masch—Aug. 10, 1913. No. 44694 D.

Submarine Cables

Submarine Transmission Line in the Baltic Sea. Illustrates and describes methods used in laying submarine cables. 800 w. Elec Wld-Aug. 9, 1913. No. 44272.

Submarine Power

Submarine Power Transmission in the Baltic. Brief illustrated description of an interesting scheme of power transmission by high-tension submarine cables. 2000 w. Elec Rev. Lond-July 11, 1913. No. 43892 A.

Substations

The Portable Rotary Converter Substation. B. W. Kerr. Gives practical applications showing the worth of such stations, and drawing and brief description of a type of construction giving low cost and satisfactory operation. 1400 w. Elec Jour—Feb., 1913. No. 40153.

New Substations in Buffalo. Illustrated description of the buildings, design and the arrangement of equipment. 2000 w.

Elec Ry Jour-May 10, 1913. No. 41971. Automatic Substations. H. R. Summerhayes. Describes the automatic substation at Detroit, in which there is working a synchronous converter controlled entirely from a distant station; also observations on automatic substations in general. Ills. 5000 w. Pro Am Inst of Elec Engrs—June, 1913. No. 43204 F.

Elaborate Sub-Station in St. Louis. Illustrated description of the building and its equipment. 1500 w. Elec Trac—June, 1913. No. 42849.

Substation of Stockholm Municipal System. E. Andreason. Describes the design and operating features of a substation with 9000 kw motor-generator equipment and 30000-amp-hr. storage battery. 2000 w. Elec Wld—June 14, 1918. No. 42841.

Industrial Substations. H. P. Liver-Traces the development of such substations, discussing the factors governing the design and installation of this class. Ills. 5000 w. Pro Am Inst of Elec Engrs—Oct., 1913. No. 46341 F.

Terminals

I. The Condenser Type Outlet Terminal. C. Fortescue. Discusses the theory of design. II. Construction and Application. J. E. Mateer. Illustrated description. 5000 w. Elec Jour-Aug., 1918. No. 44592.

Three Phase

Inductance and Capacity of Three-Phase Transmission Lines. Louis Cohen. Mathematical. 1000 w. Elect'n, Lond— July 18, 1913. No. 43954 A.

Thury System

The Thury System of Power Transmission by Continuous Currents. Describes this direct-current system, its advantages and disadvantages.

Tower Design

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2500 w. Elec Wld-Nov. 23, 1912. No. 37771.

Tower Design.

Transmission Tower Design for the Central Colorado Power Company. W. E. Belcher. Describes single circuit transmission towers for carrying electrical conductors. Ills. 3000 w. Elec Wld—March 22, 1913. No. 40780.

Structural Steel Poles and Towers. From a paper by R. Fleming before the Assn. of Ir. & St. Structural Engrs., giving data on the design and construction of supports for electric transmission lines. 2200 w. Eng Rec-Dec. 28, 1912. No. 38579.

Structural Steel Towers and Poles. R. Fleming. From a paper before the Assn. of Ir. & St. Elec. Engrs. A discussion of steel supports for telegraph and telephone lines. Ills. 6500 w. Eng News-Nov. 28, 1912. No. 37937.

Stability Tests on Iron-Frame Masts (Festigkeitsversuche an eisernen Fachwerkmasten). L. Schaller. Describes tests made by the Alb. Buss & Co., Baden, on their transmission towers. Ills. 4400 w. Zeitschr des Ver deutscher Ing—Nov. 23, 1912. No. 38451 D.

Transformer Losses

Stray Losses in Transformers. C. Fortescue and W. M. McConahey. Aims to obtain a convenient method of evaluating the actual losses in the copper of a transformer and in figuring the regu-lation. 2000 w. Pro Am Inst of Elec Engrs—Feb., 1913. No. 40189 F. Losses in Transformers. W. W. Lewis.

Divides transformer losses into no-load and load losses, the former including core and dielectric losses, and the latter resistance and stray losses. Gives results and tests. 5000 w. Pro Am Inst of Elec Engrs—Feb., 1913. No. 40200 F.

Transformers

Strains in Transformers. Abnormal Charles P. Steinmetz. An analysis of over-voltage, over-current, and over-frequency strains. An intricate subject explained in the simplest possible manner. 3500 w. Gen Elec Rev—Dec., 1912. No. 37993 C.

Some Notes on the Installation and Operation of High-Voltage Transformers. H. H. Hodgman. Suggestions for assembling and installing high tension transformers to ensure satisfactory operation. 5500 w. Gen Elec Rev—Dec., 1912. No. 37995 C.

Care and Operation of Transformers. W. M. M'Conahey. Considers methods of removing moisture and effects of over loads in oil. water and air-cooled types.

3500 w. So Elect'n-Nov., 1912. No. 37659.

Care and Operation of Transformers. W. M. M'Conahey. Deals mainly with oilinsulated transformers. 5500 w. Elec Jour-Nov., 1912. No. 87886.

Magnetic Leakage in Transformers. J. Murray Weed. Discusses the reactance, eddy-current loss, and mechanical stress-

eddy-current loss, and mechanical stress-es resulting from this cause. 2500 w. Gen Elec Rev—Dec., 1912. No. 37996 C. Commercial Tests of Lighting Trans-formers. V. M. Montsinger. Describes manner of testing, illustrating with line drawings. 1000 w. Elec Rev & W Elect'n—Nov. 30, 1912. No. 37953.

Design of Piping for Transformer Oil, Air and Cooling Water. Fred Buch. Considers in detail the oil system, the Considers in detail the oil system, the storage tank, oil treating outfit, the method of transformer pipes, connections, oil filter, etc. Diagrams. 2500 w. Elec Wld—Dec. 7, 1912. No. 38098.

Rib-Cooled Transformers (Kühlrippentransformatoren). M. Vidmar. Describes new type of oil-cooled transformer. Ills. Serial. 1st. part. 3500 w.

er. Ills. Serial. 1st part. 3500 w. Elektrotech u Maschinenbau—Nov. 10, 1912. No. 38464 D.

Simple Transformer Formulae. Caterson-Smith. Gives dimensional formula for alternating-current transformers, with examples of application. Elect'n, Lond—Jan. 3, 1913. 39140 A.

Series Types of Dry Transformers (Typenreihen von Trockentransformatoren). M. Vidmar. Mathematical considerations entering into their design. 5200 w. Elek u Masch-Diagrams.

Dec. 15, 1912. No. 39053 D.

Methods of Obtaining Greater Flexibility of Operation in Standard Transformers. George A. Thornton and George Goldman. Remarks on the improvements in quality of materials and suggestions for increasing the economies of transformer manufacture. 1500 m. Flex Widows

ormer manufacture. 1500 w. Elec Wld—Feb. 22, 1913. No. 39995.

Three-Phase to Single-Phase Transformation. W. W. Lewis. Analyzes and compares some of the schemes of connections, especially applicable to the electric welding industry. 100 w. Gen Elec Rev

—Feb., 1913. No. 39613 C.

Low Tension Distribution and Methods

of Hanging Transformers. Recommenda-tions of the Committee of Line Construction. A comparison of individual transformers and low-tension network distribution. Ills. 3500 w. So Elect'n—Feb., 1913. No. 39876.

Testing High Tension Transformers.

H. G. Davis. The present article con-

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siders resistance measurements, polarity indications, ratio determination, top voltage measurement, and parallel run. 1800 w. So Elect'n—March, 1913. Serial.

1st part. No. 40649.

Characteristics and Limitations of the Series Transformer. A. R. Anderson and H. R. Woodrow. A study of the imperfections of the series transformer, to determine how and to what extent certain constants influence its operation. 45 pp. Univ of Ill, Bul 61—Oct. 28, 1912. No. 41718 N.

The Transformation Ratio of Common Transformers with Any Distributed Windings (Das Uebersetzungsverhältnis des allgemeinen Transformators mit beliebig verteilten Wicklungen). F. Niethammer and E. Siegel. A study of the trapeze-triangle-transformer. Diagrams. 5600 w. Elek u Masch—Mar. 30, 1913. No. 41480 D.

Decreasing Frequency of Transform-F. A. Annett. An article in response to inquiries relative to the effect on the transformer losses of changing from 60 to 50 cycles. 800 w. Power-May 6, 1913. No. 41890.

On Three-Phase vs. Three Single-Phase Transformers. William Nesbit. Dis-cusses the advantages and disadvantages applying to both types. 4000 w. Elec Jour-May, 1918. No. 42433.

Operating Characteristics of Transformers. Frank T. Wyman. Considers the characteristics of a transformer, which enters into its operation. Ills. 8500 w. Jour of Ohio Soc of Mech, Elec, Steam Engrs — May, 1913. 42445 N.

High-Voltage Transformer Leads: A Comparison of Designs. Eugene D. Eby. Enumerates the requirements and treats of the theory upon which the design of all such leads is based. Ills. 4000 w. Gen Elec Rev—June, 1913. No. 42589 C.

Modern Power Transformers. Moody. Considers the factors which a builder of a large transformer must be able to calculate, and recent developments. Ills. 1200 w. Gen Elec Rev—June, 1913. No. 42590 C.

The Formation of Deposits in Oil-Cooled Transformers. A. C. Michie. Deals with the "sludging" of transformer oil, describing tests and theories. Concludes that it is an oxidation process. 2000 w. Elect'n, Lond—May 16, 1918. No. 42532 A.

Transformer Capacity and Connections for Induction Motor Feeder Circuits. J. L. Moon. Gives rules and tabulated data for determining approximately the size of transformer needed to take care

of an induction motor load of given voltage and horse-power. 1200 w. Gen Elec Rev-July, 1913. No. 43330 C.

Connecting Transformers and Motors in Industrial Plants. A. L. Temple. Considers the arrangements of transformers for highest efficiency and convenience. 1000 w. Prac Engr—Sept. 1, 1915. Serial, 1st part. No. 44862.

Important Considerations When Ordering Power Transformers. H. G. Davis. Considers primary and secondary voltages and capacity and cost of operation. 2500 w. Elec Engng-Sept., 1913. No. 45021.

Transformer Characteristics. Edward T. Moore. Discusses the rating of transformers in the present article. 2000 w. Power—Sept. 23, 1913. Serial, 1st part. No. 45274.

Merits and Early History of Some Phase-Transforming Systems. William T. Taylor. Editorial letter giving diagrams and descriptions of various systems. 2500 w. Elec Wld—Sept. 27, No. 45494. 1913.

The Operation of Large Transformers Out-of-Doors. F. C. Green. Illustrated discussion of the outdoor use of transformers and their successful operation. 2000 w. Gen Elec Rev—Oct., 1913. No. 45586 C.

The Relative Cost of Three-Phase and Single-Phase Transformers. V. L. Hollister. Discusses the relative cost of the three-phase transformers and the equivalent three single-phase units for the same service and equivalent capacity. 1600 w. Engineering Magazine-Sept., 1913. No. 44770 B.

Three-Phase Transformation. Charles H. Russell. Discusses the uses, advantages and disadvantages of different types of transformers and arrangements. 4000 w. Ap Sci—July, 1913. No. 44332 C.
The Ratio of Transformation in the

General Transformer with Distributed Windings. Dr. F. Niethammer and Dr. E. Siegel. Shows that in transformers with the primary and secondary windings differently distributed the pressures and currents are not in simple relation to the number of turns. Formulæ are given. 2000 w. Elect'n, Lond—Aug. 15, 1913. No. 44711 A.

Transformers for Outdoor Service. Explains how to overcome the difficulties encountered. Ills. 1500 w. Coal Age—Aug. 2, 1913. No. 44144.

Pole Type Transformers. C. E. Sisson. Calls attention to details in the design and construction of the modern lighting transformer both from the operator's and

Voltage Regulation

MISCELLANY

Co-operation

manufacturer's view. 3500 w. Can Elec Assn—June 1913. No. 44819 N. One Hundred and Fifty Thousand Volt Power Transformers, with Especial Reference to the Installation of the Pacific Light & Power Corporation. W. H. Dann. Illustrated description of the construction 1800 w. of these transformers.

Jour-Aug., 1913. No. 44596. See also Transformer Tests, under Measurement, and Discussions, Miscellany.

Voltage Regulation

Feeder Voltage Regulation. E. E. Lehr. Illustrates and describes regulators of the induction type and the auxiliary apparatus. 3000 w. Elec Jour-Nov., 1912. No. 37885.

Automatic Voltage Regulation of Alternating-Current Generators. Lester Mc-Kenney. Discusses the relation of the automatic regulator to the apparatus to be controlled, and matters affecting its operation. 2500 w. Elec Wld—Nov. 9, 1912. No. 37372.

Voltage Regulation of Polyphase Feeders by Automatically Controlled Feeder Voltage Regulators. M. Unger. cusses a number of methods of connecting automatically controlled single and polyphase regulators to polyphase feeders. 3000 w. Gen Elec Rev-Dec., 1912. No. 37999 C.

Wiring.

Methods of Splicing Wires and Cables. H. V. Talbot. Illustrates and describes methods. 1200 w. Elec Wld-March 15, 1913. No. 40672.

Modern Methods of Electric Wiring. Frank Broadbent. Abstract of a paper read before the Engrs-in-charge. Mainly a description of the distribution system both for lighting and electric motors. Explains the looping method of branching conductors, insulation, etc. 4500 w. Mech Engr—Feb. 28, 1918. No. 40479 A.

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Accidents

A French Inquiry into Electrical Accidents, and Suggestions for Preventing Them. W. Steuart. Gives results of in-vestigations. 2000 w. Elec Rev, Lond— April 4, 1913. No. 41220 A.

Prevention of Accidents in Central Stations. An illustrated account of the work of the New York Edison Co. in this field. 1500 w. Elec Wld-May 10, 1913. No. 41966.

The Danger of Life Involved in Directing a Stream of Water from a Fire Hose Upon a High-Tension Line. F. C. Caldwell. Report of investigations. 800 w. Sib Jour of Engng—May, 1913. No. 42419 C

Accidental Electrocution (Les accidents d'électrocution). J. J. Langlois. Theories on physiological action in electric shocks; studies on the resistance, etc., of the human body, and treatment. 7200 w. Rev gen des Sciences—April 30, 1913. No. **4**2179 D.

See also Elevators, under Power Applications.

Mr. William Duddell's Address to the Institution of Electrical Engineers. (Abstract.) Urges the broadening of the work of the Institute, explaining the neglected fields. 6000 w. Elect'n, Lond—Nov. 22, 1912. No. 38022 A.

Address before the Incorporated Municipal Electrical Association. C. E. C. Shawfield. Reviews the growth of elec-2200 w. tricity supply in England.

Elect'n, Lond—June 20. 1913. No. 43370 Å.

Advertizing

Central Station Advertizing. D. H. McDougall. Considers methods of advertizing. 1500 w. Can Elec Assn—June, 1913. No. 44818 N.

Australasia

An Electrical Engineer's Tour in Australasia. Justus Eck. An interesting account of what has been accomplished in the electrical field. 6500 w. Aust Min Stand-May 22 & 29, 1913. parts. No. 43168 each B.

Austria

The Electrical Industry During 1912 (Die elektrotechnische Industrie im Jahre 1912). Emil Honigman. A review of the industrial uses of electricity in Austria. Serial. 1st part. 3200 w. Elek u Masch—June 1, 1913. No. 43045 D.

By-Product Plants

Gas-Electric and By-Products Recovery Plant at the Accrington Electricity Works. Illustrated detailed description of this plant. 1800 w. Elec Rev, Lond-Aug. 15, 1913. No. 44708 A.

Congress

Colorado Meeting of the American Electrochemical Society. A report of the meeting held at Denver, Boulder and Golden, Colo., with abstracts of papers. Ills. 2500 w. Met & Chem Engag-Oct., 1913. No. 45782 C.

Cu-operation

The New Movement of Co-operation in the Electrical Industry. L. B. Judson.

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Municipal Contro

Outlines the plans now being agitated. 3500 w. Gen Elec Rev-May, 1913. No. 41813 C.

Copper

Copper—Its Uses in Large Electrical Works. J. L. Jones. Outlines the characteristics of copper, methods of production from the ores and from reclaimed copper, its working and applications. 2500 w. Elec Jour—Sept., 1913. No. 45104.

Dangers

Electrical Dangers. S. Lees. Calls especially attention to dangers for workers among live wires, and criticizes practices needing to be corrected. 1700 w. Elec Rev, Lond—Jan. 31, 1913. No. 39773 A.

Common Electrical Dangers. William S. Boyd, in Safety Engng. Dangers from improper wiring, fixtures, motor equipments, etc., are discussed. 1500 w. Elec Rev & W Elect'n—Aug. 23, 1913. No. 44560.

Discussions

Discussions

Discussion on "The Use of Reactance in Transformers," W. S. Moody, and "The Effect of Temperature Upon the Hysteresis Loss in Sheet Steel," Malcolm Maclaren, at New York, Oct. 11, 1912. Ills. 6500 w. Pro Am Inst of Elec Engrs—Dec., 1912. No. 38512 F.

Economics.

Electric Propaganda and Possible Methods for Increasing the Sales of Electric Power and Electrical Appliances (Elektrizitätspropaganda und sonstige Mittel zur Erhöhung des Absatzes von elektrischem Strom und elektrischen apparaten). E. Wikander. Proposals for meeting the increased competition with gas companies. Discussion. 3500 w. Elek u Masch — Feb. 2, 1913. 40568 D.

The Financial Needs of the Electrical Industry. Frank A. Vanderlip. statement of the recent growth and future capital requirements. 5000 w. Elec Wld

-Sept. 13, 1913. No. 45117. Electrical Instruments

Electrical Instruments and Meters in Europe. H. B. Brooks. Describes the works of 31 leading firms as to organization, methods and products. 88 pp. U S Bureau of Foreign & Domestic Com -No. 66. No. 41716 N.

Electrotechnical

The Aims and Work of the International Electrotechnical Commission. Silvanus P. Thompson. Abstract of a paper before the Inst. of Elec. Engrs. An outline of the work already accomplished. Discussion. 4000 w. I Lond—Jan. 3, 1913. No. 39139 A. Elect'n. Exhibition

Electricity at the Ghent Exhibition.

Illustrated review of the electrical exhibits and the supply of current. 1500 w. Elec Rev, Lond—Sept. 5, 1913. Serial, 1st part. No. 45142 A.

France

The Electrical Industry in France. Georges Dary. A summary of the new electrical distribution systems in Paris, the projected utilization of the river Rhone, the electrification of the Paris suburban railways, and other developments of interest. 3000 w. Elec Rev, Lond-May 16, 1913. Serial. 1st part. No. 42528 A.

Gramophone

The Development of the Talking Machine. Emile Berliner. Address on re-ceiving the Institute's Elliott Cresson Medal. 4000 w. Jour Fr Inst-Aug., 1913. No. 44542 D.

Handbook

A Solicitor's Pocket Book. Describes a condensed compendium of information constructed by the writer, using plotted curves. 1200 w. Elec Rev & W Elect'n— Aug. 16, 1913. No. 44411.

Hiring Schemes

Apparatus on Hire. T. C. Parsons. the advantages of hiring Discusses electrical apparatus for temporary or permanent work. 2000 w. Elec Rev, Lond—Sept. 12, 1913. Serial, 1st part. No. 45286 A. Liquid Air

Elementary Theories of Liquid-Air Machines (Théorie élémentaire des machines à air liquide). H. Brot. Mathematical discussion on the Linde and Claude machines. Ills. 18000 w. Rev. de Mecan—July, 1913. No. 45331 E+F.

London

Electricity Supply in London. An account of the present state of electricity supply in London and information concerning its development. Ills. 17000 w. Elect'n, Lond — June, 13, 1913. No. 43131 Á.

Monopolies.

The Electrical Installation and Electrical Material Monopoly (Das elektrische Installations- und Materialmonopol). Heinrich Schreiber. Advantages and disadvantages of monopolistic control. 5000 w. Elek u Masch—Feb. 9, 1913. No. 40569 D.

Municipal Control

Control of Electrical Installation by the Municipality. H. S. Wynkoop. Read before the Kilowatt Club. Discusses the enforcing suitable regulations for the installation of electrical appliances, the construction of a license law, and related topics. 1500 w. Elec Rev & W Elect'n —Oct. 25, 1913. No. 46237.

Naw England

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Terminology

New England

Electric Development in New England. Illustrated description of the four-million dollar project on the Deerfield River in Massachusetts and Vermont. 6500 w. Elec Wld-Dec. 28, 1912. No. 38693.

Nomenclature

The Nomenclature and Definitions of Magnetic and Electrical Quantities. Report of a committee of the British Association. 3000 w. Elect'n, Lond—Sept. 26, 1913. Serial. 1st part. No. 45731 A.

Problems

Future Problems of Electrical Engineering. Dr. C. P. Steinmetz. An examination of present tendencies, concluding that they point to the separation of the use of electric power from its generation, the concentration in a unified system, improvement of the load factor, etc. 5000 w. Jour W Soc of Engrs—March, 1913. No. 41269 D.

Reviews of 1912

Electrical Engineering in 1912. views the progress during the past year in the electrical industry—the power plants, electric railways, dynomos and motors, ship propulsion, electric lighting, etc. 6000 w. Engr, Lond-Jan. 3, 1913. No. 39165 A.

A Review of the Year in the Electrical Industry. Brief review of developments in telephony and telegraphy, illuminating engineering, electric railways, electrochemistry, electrical machinery, etc 10000 w. Elec Rev & W. Elect'n-Jan 4. 1912. No. 38814.

Electrical Progress and Developmen During 1912. Reviews recent develop ments in electrical apparatus and its application. 12700 w. So Elect'n-Jan.. 1913. No. 39215.

Rules

Standardization Rules for Electrical Machinery. Gives the rules provisionally adopted by the Council of the British Electrical and Allied Mfrs.' Assn. 3000 Mech Engr - May 23, 1913. No. 42750 A.

Statistics.

Review of Statistics of Electric Power Plants and Electric Railways in Austria to January 1st, 1913. (Ergebnisse der Statistik der elektrizitätswerke und der elektrischen Bahnen in Oesterreich nach dem Stande vom 1 Jänner 1918). L. Tables. Rosenbaum. 2000 w. Élek u Masch—Feb. 16, 1913. No. 40570 D.

Steinmetz

Charles Proteus Steinmetz. Sutherland Martin. Brief review of his important share in electrical progress. 2000 w. Sci Am Sup—July 12, 1913. No. 43497.

Terminology

Report on the Terminology of Machines (Rapport sur la terminologie des machines). Classifications of motors and transformers, and definitions of motor terms adopted by the Syndicat profes-sionnel des Usines d'électricite. Report presented to the Société Internationale des Electriciens. 3500 w. Bull Soc Int d Elec-Mar., 1913. No. 41512 F.

INDUSTRIAL ECONOMY

Accident Prevention

Address

Accident Prevention

Accident Prevention and Museums of W. H. Tolman. Abstract of a lecture at Toronto. An account of the American Museum of Safety and its work. Discussion. 8500 w. Jour Can work. Discussion. 8500 w. Jour Min Inst—Vol. XV. No. 42057 N.

The Conservation of the Worker. Arundel Cotter. Illustrated review of safety methods used by steel, railway and manufacturing companies. 3000 w. Engineering Magazine-July, 1913. No. 43094 B.

Accident Prevention in Construction Work. Suggestions for industrial safety. 3000 w. Sci Am Sup-June 7, 1913. No.

Safety Engineering. G. Gilmour. The importance of studying the prevention of industrial accidents. Ills. 6000 w. Sci

Am Sup—July 19, 1913. No. 43780.
See also Protective Devices, under ELECTRICAL ENGINEERING, Transmission, Safety Devices, under Mechanical En-GINEERING, Machine Works and Foun-dries, and Accidents, under Electrical Engineering, Miscellany.

Accounting

A System of Accounting for Electrical Contractors. F. L. Decker. Explains a system formulated by the writer. 2000 w. Elec Rev & W Elect'n—Nov. 2, 1912. Serial. 1st part. No. 37259.

Cost Accounting in the Engineering Department. Explains a system worked out for use on the Northern Pacific. 2500 w. Ry Gaz, Lond—Dec. 6, 1912. No. 38238 A.

An Outline of Mine Accounting. Henry B. Fernald. An outline of the relation of capital charges, operating expenses and deferred charges, and of assets an liabilities. 2500 w. Eng & Min Jour-Jan. 4, 1913. No. 38807.

Accounting as a basis for and a Measure of Efficiency in Business. Carl H. Nau. Address before the Cleveland Chamber of Commerce. Explains the function of a cost system and considers the fundamental principles of correct accounting. 5000 w. Jour of Acc—March, 1913. No. 40864 C.

A System of Mine Accounts. Mason T. Adams. Gives a summary of a general system, with specimen forms. 2500 w. Sch of Mines Qr—Jan., 1913. No. 40760 D.

Charges. Amortizing and Interest Louis Cleveland Jones. Considers costs of carrying unmined coal in the ground, and the economical period for exhausting mines. 2500 w. Col Engr-March, 1913. No. 40272 C.

The Accounting System of the Maryland State Roads Commission. Description of the system, taken from a paper by H. G. Shirley, read at the Am. Roads Congress. 3500 w. Engng & Con— April 16, 1913. No. 41277.

A Practical System of Mine Accounts. Mason T. Adams. Gives a summary of a general system in use in a lead zinc mine, but adaptable to any mining op-eration. 2000 w. Min & Engng Wld— April 5, 1913. No. 41078. Method of Handling Metered Water

Accounts at Ottawa, Kansas. Illustrates and describes the style of meter sheet and the register for water service ac-

counts. 1000 w. Engng & Con—April 23, 1913. No. 41590.

Accounting Versus Statistics. Milan V. Ayres. Points out instances where the standard classification makes it impossible justly to compare energy, production costs and other data. Proposes changes to correct this condition. 2500 w. Elec Ry Jour-May 3, 1913. No. 41874.

How to Figure Costs in the Electrical Contracting Business. A. J. Burns. Shows the importance of correct business practice, and considers the making of estimates. 3500 w. Elec Rev & W Elect'n-May 10, 1913. No. 41962.

Foundry Calculations (Giessereikalkulation). O. Leyde. A study of the costs of material, wages, overhead, general, etc., compared with selling prices. 6600 w. Giess Zeit — May 1, 1913. No. 42131 D.

Mining Cost Accounts of the Anaconda Copper Mining Co. H. T. Van Ells. Brief description. 3000 w. Bul Am Inst of Min Engrs—June, 1913. No. 43257 F. An Accounting System for Coal Com-panies. J. C. McNeil. A brief descrip-

tion of a system of book-keeping in which reliance is placed on vouchers and looseleaf forms. 3000 w. Coal Age—Sept. 20, 1913. No. 45246.

See also same heading, under CIVIL ENGINEERING, Roads and Pavements, and under Street and Electric Railways.

See also Water-Works Accounting,

under Civil Engineering, Water Supply.

Addresses

Address by the President. Sir H.

Frederick Donaldson. Deals particularly with the educational system. 8800 w. Inst. of Mech Engrs - April 18, 1913. No. 41928 N.

Agriculture

The New Agriculture. Edward A. Rumely. With editorial note. On the application of engineering methods to food production. 4800 w. Cassier's Mag—Nov., 1912. No. 38362 B. Farming with Dynamite. William Cul-len. Describes the operations connected

with the principles underlying the use and the appliances required. Ills. 6000 w. Jour Chem, Met & Min Soc of S Africa-Oct., 1912. No. 38227 E.

Review of Mechanical Cultivation (Revue de culture mécanique). A symposium, edited by Max Ringelmann, discussing mechanical tractors, locomotive and other types, employed in the cultivation of land. Ills. 11000 w. Bull vation of land. Ills. 110 Soc d'Encour—Nov., 1912. No. 39069 \mathbf{E} . + \mathbf{F} .

See also Motor Plows, under MECHAN-ICAL ENGINEERING, Automobiles.

Appraisals

The Appraisal of Water Power Rights. Halbert P. Gillette. Discusses different methods of estimating. 6800 w. Engng & Con—Dec. 4, 1912. No. 38046.

See Valuation, under Industrial Econ-

OMY.

Apprenticeship

The Apprenticeship Question. view of this question with special reference to recent developments and in relation to engineering. 3000 w. Eng, Lond -Dec. 13, 1912. Serial. 1st part. No. 38527 A.

Apprenticeship Systems and Co-operative Schools in the United States. James F. Barker. A general review of past and present practice, and the needs in this field. General discussion. 10500 w. Jour Cleveland Engng Soc-Jan., 1913.

No. 39397 D.
Training Apprentices in Machine Shop Work. Illustrates and describes a successful system evolved by the R. K. Le-

Blond Machine Tool Co. 1200 w. Ir Trd Rev—March 20, 1913. No. 40720. Apprenticeship on the Illinois Central. Explains features of the shop apprenticeship methods and the co-operative plan. 3500 w. Am Engr — May, 1913. 41836 C.

Santa Fe Apprentice Instruction. Reuben T. Peabody. Explains the system of instruction developed. Ills. 1500 w. Ry Age Gaz (Mech Ed)—June, 1913. No. 42681 C.

Indenture for Machinery Molders' Apprentice. Also for agricultural and stove molders' apprentice, and for bench and brass molders' apprentice. 1500 w. Am Found Assn-1913. No. 43333 N.

Study Your Apprentice Boys Carefully. G. M. Basford. An address delivered at the annual meeting of the Santa Fe Apprentice instructors, at Topeka, May 27. 4000 w. Ry Age Gaz—July 4, 1913. No.

Apprenticeship. Condensed abstract of information received in reply to questions sent out by a committee of the Gen. Foremen's Assn. 3500 w. Ry Age Gaz (Mech Ed)—Aug., 1913. No. 44263 C.

Some General Ideas on Apprenticeship and the Instruction of Foundery (Quelques idées générales sur l'apprentissage et l'enseignment de la fonderie). L. Goujon. Advocating the inclusion of foundry training in trade schools. 3500 w. Rev de Metall-Aug., 1913. No. 45322 H.

Arbitration

The Effect of Recent Decisions Upon the Arbitration Clause. W. Valentine Ball. Discusses the clause usually inserted in contracts for the erection of works to secure the reference of disputes to arbitration. General discussion. 9500 w. Surveyor. Dec. 6, 1912. No. 38239 A.

Firemen's Arbitration Award. Gives the first part of the report in part, and the award in full. 2500 w. Ry Age Gaz —April 25, 1913. No. 41643. The Canadian Method of Preventing

Strikes and Lockouts. Address of W. L. McKenzie King at dinner of the Ry. Business Assn. in New York, Dec. 19, 1912. 10500 w. Bul Int Ry Cong—

1912. 10500 w. Bul Int Ry Cong—April, 1913. No. 41684 G.

The Question of Compulsory Arbitration in the Railway Service, before the "Société d'Etudes Legislatives" of Paris. Marcel Peschaud. 7600 w. Bul Int Ry Cong—April, 1913. No. 41683 G.

Can Engineers Be Trusted to Arbitrate Fairly and Intelligently between the Public Interests and the Property Interests? Extracts from and editorial notes on an article by Robert M. La Follette discussing railroad valuation work. 3000 Eng News—June 5, 1913. No. 42701.

Conciliation and Arbitration in the Building Trades of Greater New York. Charles H. Winslow. Reviews past and present, arbitration plans and what has been accomplished in the different trades. 95 pp. Bul. U. S. Bureau of Labor Statistics—No. 124. June 16, 1913. No. 45299 N.

See also Labor, under Industrial ECONOMY.

Budget

What Is Involved in the Making of a National Budget. Frederick A. Cleve-

Business Administration

Corporations

land. Explains the importance and aim of the budget. 6000 w. Jour of Eff Soc —July, 1913. No. 45552 D.

Business Administration

Military History and the Science of Business Administration. Edw. D. Jones. This third and last article of a series defines six administrative principles. 3000 Engineering Magazine-Dec., 1912. No. 37786 B.

Chemical Industries

Chemical Industries of Belgium. Notes from a consular report by Thomas C. Information concerning sulphuric acid, nitric acid, superphosphate, guano and Thomas meal, soda, etc. 5000 w. Chem Engr—Feb., 1913. No. 40112 C. Efficiency in Chemical Industries. T.

B. Wagner. Presidential address delivered before the American Institute of Chemical Engineers. Deals particularly with the manufacture of corn products in the United States. 3500 w. Met & Chem Engng-Aug., 1913. No. 44095 C.

Chemistry.

Recent Progress in Applied Chemistry and in Engineering. James O. Handy. Address of the retiring president. Discusses recent discoveries and their applications, and recent developments in various fields of engineering. 22000 w. Pro Engrs' Soc of W. Penn—Feb., 1913. No. 40921 D.

Combinations

Concentration in German Industries, Especially in Coal Mining (Die Konzen-tration im deutschen Wirtschaftsleben, im besondern im Steinkohlenbergbau). Ernst Jüngst. A series of statistical tables showing the disproportionate increase, in all industrial lines, of the gigantic companies as against the small plants. 8500 w. 1913. No. 45462 D. 8500 w. Glückauf-Aug. 30,

Commerce

What Makes Commerce? A symposium of opinions on the importance of harbor development and dock efficiency. Ills. 6000 w. 42867 B. Cassier's—June, 1913. No.

Planning for Commerce via the Panama Canal. Charles M. Pepper. A discussion of details preparatory to the opening of the canal, the expected traffic. Ills. 3500 w. Ir Age—Oct. 16, 1913. Serial. 1st part. No. 45911 C.

Commercial Engineering

Some of the Fundamental Principles of Commercial Engineering. Introduction to a series of articles dealing with various aspects of the work of the commercial engineer. 2000 w. Gen Elec Rev—April, 1913. Serial. 1st part. No. 40984 C.

Conservation

Our National Resources and Our Federal Government. Discussion of the paper of R. W. Raymond, presented at the Cleveland meeting. 4000 w. Bul Am Inst of Min Engrs — Feb., 1913. No. 40163 F.

One Aid to Conservation. Walter R. Wheaton. Remarks on waste of timber and timber preservation. 2000 w. Jour Worcester Poly Inst — May, 1913. No. 42404 C.

Conservation. James Douglas. cusses waste, especially in connection with the mining industry. 3000 w. Sch of Mines Qr—July, 1913. No. 43736 D. The National Forests and Development

of Natural Resources. Henry S. Graves. A discussion of the development of the national forests and their resources. 4500 w. Pro Am Min Cong-Nov. 25-29, 1912. No. 44060 N.

The Scientific Utilization of Natural Resources. Dr. W. W. Andrews. Read before the Convention of the Union of Saskatchewan Municipalities. cusses the utilization of the wind, clay resources, fuel production, etc. 2500 w. Can Engr—July 10, 1913. No. 43684.

The Truth About "Pinchot's Doughnuts." A. H. Ricketts. Discussion of matters relating to the conservation of natural resources in the West. 3500 w. Min & Engng Wld—July 26, 1913. No. 43942.

See also Alaska, under MINING AND METALLURGY, Miscellany.

Convict Labor

See same heading, under CIVIL ENGI-NEERING, Roads and Pavements.

Co-operation.

Are We Ready for Industrial Co-operation? Fairfax Harrison. An address Fairfax Harrison. An address before the state convention of the Y. M. C. A., at Hammond, Ind., Nov. 22, 1912. 4000 w. Bul Int Ry Cong—March, 1913. No. 40915 G.

Co-partnership
Another View on the Co-partnership
Ouestion.
W. T. Wardale. Discusses the relation of union labor to capital and how a successful co-partnership system can be established. 3000 w. Elec Rev, Lond-Jan. 3, 1913. No. 39138 A.

Corporations

Contribution of Industrial Combinations to National Welfare. Magnus W. Alexander. An argument that the big industrial combination, from its very nature, is capable of subserving the public good to a greater extent than of individual employers. 2500 w. Gen Elec Rev—Dec., 1912. No. 37994 C.

Cost Keeping Depreciation

Cost Keeping.

A Simple System for Procuring Cost
Data. Gives details of the routine used
by the National Tool Co. 1800 w. Ir
Age—March 27, 1918. No. 40886 C.
System for Keeping Costs in a Foun-

dry. Edward A. Bryce. Outlines a cost system operating successfully. 1800 w. Ir Age-March 6, 1913. No. 40336 C.

The Fallacy of Including Interest and Rent as Part of Manufacturing Cost. A. Lowes Dickinson. Additional note on this subject, with reprint of an earlier article. 3000 w. Jour of Acc—Aug., 1913. No. 44839 C.
See also same heading, under CIVIL

ENGINEERING, Construction; and under

Mining and Metallurgy, Mining.

Cost Methods

Overhead Expense Distribution. Royal R. Keely. Abstract of paper and discussion presented at the Phila. meeting. Considers methods of determining the indirect expense. Discussion. 3500 w. Jour Am Soc of Mech Engrs—June, 1918. No. 42957 D.

Methods of Determining Shop Costs. H. F. MacLane. Third of a series of articles on works management. Deals principally with cost figuring. 3000 w. Elec Jour-June, 1913. No. 43229.

A Modern Sheet-Metal Shop and Cost System. Describes methods of cost-ac-counting, tool and stock keeping in a Cleveland shop planned to facilitate eco-nomical production. Ills. 2500 w. Met Work—June 6, 1913. No. 42672.

Uniform Cost Methods in the Foundry Industry. C. E. Knoeppel. Suggestions for the elimination of cut prices. 2500 w. Foundry—July, 1913. No. 43412.

Economical Foundry Cost-Keeping Methods. E. W. Riker. Read before the Phila. Found. Assn. Explains how the cost of production can be accurately ascertained. 2500 w. Foundry—July, 1913. No. 43414.

Automatic Cost Calculations of a Coking Plant (Selbstkostenberechnung eines Kokereibetriebes). F. Korten. Explaining a cartographic cost-keeping system and its maintenance. Ills. 2500 w. Glückauf—Aug. 30, 1913. No. 45397 D.

Costs

Manufacturing Axioms Concerning Costs. Henry R. Towne. Sums up the results of modern experience and states the views now generally held concerning the fundamental principles which underlie accounting. 4000 w. Jour Am Soc of Mech Engrs—Dec., 1912. No. 38506 D.

Axioms Concerning Manufacturing Costs. Henry R. Towne's paper is discussed. 3000 w. Jour Am Soc of Mech

Engrs—April, 1913. No. 41304 D. A Problem in the Distribution of Expense Burden. H. C. Bentley. A problem in cost finding designed to illustrate the distribution of manufacturing expenses according to principles set forth by A. Hamilton Church. 7000 w. Jour of Acc-July, 1913. Serial, 1st part. No. 43992 C.

Tabular Costing in Iron and Steel Works. A. Waink. Abstract from Stahl und Eisen. A brief outline of the system. 3000 w. Ir & Coal Trds Rev—July 18, 1913. No. 44043 A.

See Management, under Industrial

ECONOMY.

Cost Systems

A Foundry Cost System That Produces Results. Explains how a steel casting plant solved the cost-keeping problem and the economies effected. 2500 w. Foundry—Dec., 1912. No. 37988. Selling Expense. P. C. N. Pickworth

and Dempster Smith. An explanation of a selling cost system of approximate accuracy. 900 w. Prac Engr—Jan. 2, 1913. No. 39141 A.

An Easily Applied Common-Sense Cost System. W. O. Brace. First of a series

of articles explaining a practical costkeeping method, adaptable to small and

keeping method, adaptable to small and large foundries. 3000 w. Foundry—Feb., 1913. Serial, 1st part. No. 39649.

The Need of Common-Sense Cost Systems for the Foundry. E. W. Riker. Shows the importance of an exact cost system to the foundry industry and outlines a system. 6000 w. Am Found Assn—Oct., 1913. No. 46261 N. See also Cost Keeping, under CIVIL

ENGINEERING, Construction.

Depreciation

The Use of Depreciation Data in Rate Making and Appraisal Problems. Halbert P. Gillette. Discusses the subject of depreciation and methods of analyzing maintenance expenses. 8000 w. Engng & Con
—Oct. 30, 1912. No. 37195.

The Use of Depreciation Data in Rate Making and Appraisal Problems. Halbert P. Gillette. Discussion of the subject and explanation of a recent method, based on a new statement of the economic principle involved. 4500 w. Elec Wld-Nov. 2, 1912. No. 3728°.

Depreciation in Engineering Works. R. E. Neale. Considers in detail the sources of depreciation and the allowance. 2200 w. Mech Wld—Feb. 7., 1913. Serial, 1st part. No. 39913 A

Depreciation and Public Service Regulation. Robert H. Whitten. Discusses whether in rate regulation there should be a deduction on account of accrued de-

39356 D.

Education

Economics

preciation, though it does not interfere

with the efficiency of the plant. 6500 w. Eng News—May 8, 1918. No. 41941. A Study in Depreciation. Dr. Louis Bell. Illustrated account of early plants for long-distance energy transmission in the United States. 1000 w. Elec Wld-

Aug. 23, 1913. No. 44563.

Depreciation or Valuation of Properties. L. R. Pomeroy. Brief consideration

of methods of determining value. 800 w. Ry Age Gaz—Aug. 15, 1913. No. 44402.
Depreciation; Estimated and Actual. Dr. Alex. C. Humphreys. Read before the Inst. of Gas Engrs. of Gt. Britain. 9000 w. Engng & Con-Oct. 8, 1913. No. 45750.

See also same heading, under MECHANI-CAL ENGINEERING, Automobiles.

Economics

Basic Economics. H. F. Stimpson. Brief discussion of the true measures of applied energy. 1000 w. Cassier's Mag-Oct., 1912. No. 87154 B.

The Chamber of Commerce of the U. Harry Wheeler. Presidential address before the Central Supply Assn., Chicago, Oct. 23, 1912. Deals some of the economic problems. w. Dom. Engng—Jan. 4, 1913. Deals with 5000 38838.

Economics of Engineering. W. A. J. O'Meara. Abstract of a lecture at Faraday House. Discusses the markets, methods of management, and technical details, etc. 5000 w. Elect'n, Lond-April 4, 1913. No. 41222 A.

Education

Discussion on "Industrial Education" (Committee Report), Boston, Mass., June 27, 1912. 7500 w. Pro Am Inst of Elec Engrs—Nov., 1912. No. 37904 F.
Cost of German Industrial Education.

Gives tables compiled from official reports giving the cost. 3000 w. Am Mach— Nov. 28, 1912. No. 37837.

Report of the Committee on Industrial Education, 1912. Discusses the growing demand for apprentice, continuation, and industrial schools and how best to make industrial education useful. 4000 w. Am Found Assn—Dec., 1912. No. 38600 N. Practical Industrial Education in Bos-

Illustrated account of the equipment and methods of instruction employed at Wentworth Institute in teaching mechanical trades. 2000 w. Work—Nov. 29, 1912. No. 37944. 2000 w.

The Latest Technical High School. Illustrated description of a school in Cleveland, O., said to be the most com-plete institution of its kind in the United States. 2500 w. Ir Age—Nov. 28, 1912. No. 37929 C.

Industrial Fellowships: Five Years of an Educational Industrial Experiment. Robert Kennedy Duncan. Gives agreements established at the University of Pittsburgh, and the Industrial Fellowships of the University of Kansas, explaining their development and success. Jour Fr Inst-Jan., 1913. No. 3500 w.

The Education of Employees. Lee alloway. Read before the Nat. Com. Galloway. Gas Assn. Discusses the subject with particular reference to the gas industry. 6500 w. Jour of Acc-Jan., 1913. 39347 C.

Conservation and Research. Herbert T. Kalmus. From Quinn's Qr. Discusses economies secured by scientific investigation. 3500 w. Sci Am Sup—Feb. 22, 1913. No. 40108.

Co-operative Industrial Education in Philadelphia. Reports notable results from trade schools co-operating with educational authorities. Ills. 2500 w. Met Work—Jan. 31, 1913. No. 39567.

Moving Pictures in Railway Educational Work. An account of its successful use on the Union Pacific, to teach economical firing and other lessons. 1700 w. Am Engr—Feb., 1913. No. 39720 C.

The Industrial Need of Technically rained Men. Waldemar Kaempffert. Trained Men. Introduction to a series of articles on scientific manufacturing and the opportunities it offers. 1200 w. Sci Am—March 15, 1918. Serial. 1st part. No. 40449.

The Study of Modern Languages in Technical Schools. Winslow H. Herschel. Discusses the usefulness of a knowledge of foreign languages, and considers German to be preferred, on account of the technical position of Germans. 4500 w. Eng News-Feb. 27, 1913. No. 40237.

The Importance of Foundry Learning; the Vocation of the Foundry Engineer and his Instruction in the Technical School (Die Bedeutung des Giesserei-wesens, der Beruf des Giesserei-Inge-nieurs und seine Ausbildung an der Technischen-Hochschule). E. Leber. A study of foundry economics. 6600 w. Stahl u Eisen—Feb. 27, 1913. No. 41400 D.

A New Departure in Mining Educa-tion. H. G. Carmichael. Brief account of instruction in connection with the High School at Sudbury, Ont. 1200 w. Jour Can Min Inst — Vol. XV. No. 42059 N.

Industrial Education for Miners. Frederick H. Sexton. Brief accounts of attempts to provide educational advan-tages for the miner to train him for

responsibility. Discussion. 5500 w. Jour Can Min Inst—Vol. XV. No. 42058 N.

Trade Teaching in Foundry Practice at Wentworth Institute. E. A. Johnson. An account of the instruction in foundry work. Ills. 4000 w. Am Found Assn—May, 1913. No. 42494 N.

Vocational Training in Plumbing. Illustrated account of work in a New York City School and the results. 2500 w. Met Work—May 30, 1913. No. 42496.
Industrial Education. F. J. Trinder.

Industrial Education. F. J. Trinder. Explains the work in progress at New Britain and Bridgeport, Conn. 1500 w. Jour Am Soc of Mech Engrs—June, 1913. No. 42956 D.

Industrial Education. Five brief papers relating to several phases of the subject. The authors are Henry H. Norris, F. C. Henderschott, A. J. Rowland, Robert Sibley, John Price Jackson and J. W. L. Hale. 13,000 w. Pro Am Inst of Elec Engrs—June, 1917. No. 43214 F. A School That Trains Boys for Shop Work. Edward K. Hammond. Describes

A School That Trains Boys for Shop Work. Edward K. Hammond. Describes shop and drafting-room methods of a progressive technical High School.—The William L. Dickinson High School, Jersey City, N. J. Ills. 3300 w. Mach, N Y— June, 1913. No. 42566 C.

Educating Apprentices in Apprentice Schools. B. F. John. Plans for training boys who are learning the sheet metal trade. 2500 w. Met Work—June 30, 1913. No. 42964.

The Relative Importance of Principles and Practice in Education. Dr. James Douglas. Commencement address at Colo. Sch. of Mines. A review of metal-lurgical developments during the last forty years in Colorado. 5000 w. Met & Chem Engng—July, 1913. No. 43484 C.

Comments on Our Present Educational System. R. M. Hale. A critical review. 2500 w. Bul Soc for Pro & Engng Ed— Feb., 1913. No. 44821 N.

Four versus Five or More Years of Collegiate Education. Alexander C. Humphreys. Discusses collegiate education in preparation for the profession of engineering. 4500 w. Stevens Ind—July, 1913. No. 44326 D.

Value of the Classics in Modern Edu-

Value of the Classics in Modern Education as Viewed by an Engineer. Charles P. Steinmetz. Address before the Classical Assn. of the Middle West and South. Explains the aim of education and the value of classic literature. 2500 w. Eng Rec—Aug. 9, 1913. No. 44241.

w. Eng Rec—Aug. 9, 1913. No. 44241.
The Effect of Coöperative Courses
Upon Instructors. John T. Faig. Refers
particularly to instructors in technical
subjects. 3000 w. Bul Soc for Pro of
Engng Ed—March, 1913. No. 44823 N.

The Training of Engineering Teachers. Gardner C. Anthony. Discusses qualities desirable in the highest type of teacher. 1000 w. Bul Soc for Pro of Engng Ed—March, 1913. No. 44822 N.

March, 1913. No. 44822 N.
Training Teachers by Apprenticeship.
Samuel C. Earle. Discusses how to increase the efficiency of teachers. 2500 w.
Bul Soc for Pro of Engng Ed—March,
1913. No. 44824 N.

Manual Instruction as an Educational Subject. Second Appendix to the report of the Consultative Committee on Practical Work in Secondary Schools. On the development of constructional handiwork. 6000 w. Jour Soc of Arts—Aug. 1, 1913. No. 44299 A.

The Training of Engineers Engaged on Work Associated with Sanitation. J. Radcliffe. From a paper read at the Exeter Cong. of the Roy. San. Inst. 2200 w. Surveyor—Aug. 15, 1913. No. 44716 A.

Industrial Education in Berne, Switzerland. F. P. McKibben. An account of the character of the instruction and the work done by students. 1500 w. Eng Rec—Aug. 9, 1913. No. 44245.

Teaching Mathematics to Engineering Students. Willis Whited. Suggestions as to the teaching of pure mathematics. 2500 w. Eng News—Sept. 18, 1913. No. 45219.

The Failure of Engineering Education in England. The present article considers the evidence of the failure. 1000 w. Prac Engr—Aug. 28, 1913. Serial, 1st part. No. 44914 A.

Professional Instruction of Industrial Labor as Practiced Abroad (L'istruzione professionale estera dell'operais addetto alle industrie). G. Pincherle. A brief statement of German, American and British practice in trade schools and apprentice education. 2400 w. Industria—Sept. 7, 1913. No. 45368 D.

The National School of Arts and Meas-

The National School of Arts and Measures at Paris (L'Ecole Nationale d'Arts et métiers de Paris). L. Pierre-Guédon. Chiefly a description of the machine tools installed. Ills. Serial, 1st part. 3500 w. Genie Civil—Aug. 30, 1913. No. 45856 D. Report of the Committee on Industrial

Report of the Committee on Industrial Education. P. Kreuzpointner. 6000 w. Am Found Assn—Oct., 1913. No. 46255 N.

Liberal Education and the Engineer. Arthur T. North. Discusses important elements of an engineer's training. 1200 w. Wis Engr—Oct., 1913. No. 46313 C.

European Engineering Schools. F. E. Turneaure. Describes features of schools in Germany, France, and Great Britain. 2500 w. Wis Engr—Oct., 1913. No. 46314 C.

Luciency

Efficiency

Educational Media for the Advancement of Science in the United States of America (Die geistigen mittel des technischen Fortschrittes in den Vereinigten Staaten von Nordamerika) Conrad Matschoss. An account of the school, high school, and collegiate system, and the industrial and apprentice schools, etc., in the United States. Serial. 1st part. 8000 w. Zeit des Ver deutscher Ing—Sept. 27, 1913. No. 46043 D.

See also same heading, under CIVIL ENGINEERING, Roads and Pavements; and same heading, under RAILWAY ENGINEERING, Miscellany. See also Apprenticeship, under Industrial Economy.

Efficiency

Efficiency in the Manufacture of Railway Transportation. Harrington Emerson. This second installment outlines the influence of the personality of the railroad executive, as exemplified on the Pittsburg & Lake Erie R. R. 3000 w. Engineering Magazine—Jan., 1913. No. 38677 B.

Methods of Promoting Efficiency in Maintenance on the Pittsburgh and Lake Erie. An improved system evaluating section work on a unit basis and a record system for keeping labor and material

Efficiency in the Manufacture of Railway Transportation. Harrington Emerson. Third article of a series. Discusses selection of an organization by individual aptitude. 4500 w. Engineering Magazine—Feb., 1913. No. 39430 B.

Efficiency in the Manufacture of Railway Transportation. Harrington Emerson. The part played by supremely good equipment is discussed in this fourth article of a series. 4500 w. Engineering Magazine—March, 1913. No. 40087 B.

Individual Efficiency. Norman A. Hill. Remarks on the technical meaning of the term, and means of increasing personal efficiency. 2000 w. Ap Sci—Jan., 1913. No. 39947 C.

Efficiency in the Manufacture of Railway Transportation. Dr. Katherine M. H. Blackford. This is the fifth article in Mr. Harrington Emerson's series, written by request. Considers the part played by supremely good personnel. 3000 w. Engineering Magazine—April, 1913. No. 40911 B.

Efficiency in the Manufacture of Railway Transportation. Harrington Emerson. The practical application of the twelve principles on the P. & L. E. Ills. 4500 w. Engineering Magazine—May, 1913. No. 41628 B.

The Chemical Engineer and Industrial Efficiency. W. M. Booth. Considers methods that can be adopted in the conduct of manufacturing business. 3500 w. Sci Am Sup—April 5, 1913. No. 41055.

Efficiency as Applied to Mining. W. J. Crocker. Suggestions affecting mine profits. 1800 w. Min & Engng Wld—April 19, 1913. Serial. 1st part. No. 41862.

Efficiency in the Manufacture of Railway Transportation. Harrington Emerson. This seventh and last article of the series discusses the application of the last nine principles of efficiency. Ills. 7000 w. Engineering Magazine—May, 1913. No. 42491 B.

Experiences in Efficiency. Benjamin A. Franklin. First of a series of articles showing success secured by a study of workmen's tendencies. 2500 w. Engineering Magazine—Aug., 1913. No. 43912 B.

Efficiency and the Worker. H. R. Callaway. A discussion from the workers viewpoint. 1500 w. Engineering Magazine—Aug, 1913. No. 43918 B.

What Is Efficiency? W. N. Polakov and L. G. Hanmer. Discusses present day efficiency methods and the real purposes of efficiency engineering. 3000 w. Cassier's—July, 1913. No. 43356.

Causes of Failures in Efficiency Work. F. W. Collins. Discusses the factors that create crises and how to avoid them. 2000 w. Engineering Magazine—Sept., 1913. No. 44769 B.

Experiences in Efficiency. Benjamin A. Franklin. Second article of a series. Shows how production was increased by simple reorganization. 3000 w. Engineering Magazine—Sept., 1913. No. 44764 B.

The Effect of Governmental Efficiency Upon Efficiency in Industry. Le Grand Powers. Remarks on government accounting, and the importance of efficiency that will benefit the masses. 3500 w. Jour of Eff Soc—July, 1913. No. 45551 D.

Factory Efficiency. Lucian I. Yeomans. Read before the Am. Boiler Mfrs.' Assn. Discusses the essential elements of factory efficiency. 4000 w. Boiler Maker—Sept., 1913. No. 45215.

Experiences in Efficiency. Benjamin A. Franklin. This third article of a series discusses the problem of quality of workmanship. 3300 w. Engineering Magazine—Nov. 1913. No. 46304 B.

Magazine—Nov. 1913. No. 46304 B.
Fields for Future Expansion of Efficiency Engineering. Francis W. Collins.

Egypt Engineering

Shows the opportunities for professionally trained engineers in the principles and practice of efficient management to be practically boundless. 2000 w. Engineering Magazine—Nov., 1913. No. 46308 B.

The Efficiency Engineer in the Foundry. E. A. Barnes. Discusses the efficiency problems of the foundry and the best way of solving them. 1500 w. Am Inst of Metals—Oct., 1913. No. 46275 N.

See also Accounting, Management and Organization, under Industrial Economy; and Shop Hygiene and Shop Practice, under Mechanical Engineering, Machine Works and Foundries. See also same heading under Civil Engineering, Municipal and under Mining and Metallurgy, Mining.

Egypt

The Resources of Egypt. R. de Rustafjaell. Reviews briefly the physical conditions of the country, the natural productiveness of the soil, the mineral wealth, etc. 2000 w. Jour Soc of Arts— Aug. 1, 1913. No. 44298 A.

Engineering
The Relation of the State to the Practice of Engineering. A topical discussion.
12000 w. Jour W Soc of Engrs—Oct.,
1912. No. 87741 D.

The Position and Prospects of the Young Mining Engineer on the Rand. Percy Cazalet. Information of interest and value to mining engineers. 3000 w. S. African Min Jour—Sept., 1912. (Special.) No. 37851 N.

The Philosophy of Engineering. Maurice G. Parsons, Jr. Outlines the possibilities of cooperation and discusses the opportunities presenting themselves to engineers. 5500 w. Pro Am Soc of Civ Engrs—April, 1913. No. 41647 F.
Professional Relations of the Engineering

Professional Relations of the Engineer. A discussion before the American Institute of Consulting Engineers. 5000 w. Eng Rec—April 12, 1913. No. 41186. The Human Side of Engineering. John

The Human Side of Engineering. John C. Wait. A discussion of the relation of the engineer to his fellowman and his work. 6500 w. Sib Jour of Engag—June, 1913. Serial. 1st part. No. 43183 C.

The Engineer and His Profession. A. J. Himes. The characteristics of engineers are discussed, some of the problems of engineering, preparation useful to engineers, etc. 4000 w. Cornell Civ Engr—June, 1913. No. 43187 C.

A Suggestion for the Engineering Profession. William McClellan. Suggests the formation of an American Engineering Association composed of members elected annually from present societies. 1500 w. Pro Am Inst of Elec Engra—June, 1913. No. 43213 F.

Theory and Practice in Engineering Work. Konrad Meier. The present number discusses hot water heating and matters related. 2200 w. Heat & Vent Mag—June, 1913. Serial. 1st part. No. 43180.

The Philosophy of Engineering. Discussion of Maurice G. Parsons, Jr's paper. 2500 w. Pro Am Soc of Civ Engrs—Aug., 1913. No. 44788 F.

The Imaginative Faculty in Engineering. Isham Randolph. Address in receiving the Institute's Elliott Cresson medal. 2000 w. Jour Fr Inst—Aug., 1913. No. 44543 D.

Some Tendencies and Problems of the Present Day and the Relation of the Engineer Thereto. George Fillmore Swain. President's address at the annual convention, in Ottawa, Ont., June 18, 1913. 14000 w. Pro Am Soc of Civ Engrs—Aug., 1913. No. 44785 F.

A Few Notes on Engineering Research and Its Co-ordination. G. H. Roberts. Describes results of researches of general interest carried out in Woolwich Arsenal, with suggestions for a 'clearing house' for handling records of research work and so avoid wasteful duplication. Ills. 4500 w. Inst of Mech Engrs—July, 1913. No. 44324 N.

The Philosophy of Engineering. Continued discussion of the paper by Maurice G. Parsons, Jr. 1300 w. Pro Am Soc of Civ Engrs—Oct., 1913. No. 46344 F.

The Relation of the Business Man and Engineer to the Present Industrial Problem. Frederick L. Crawford. A discussion of the present business situation from the standpoint of a business man with some knowledge of engineering. Also discussion. 5000 w. Brooklyn Engrs' Club—1912. No. 46393 N.

Club—1912. No. 46393 N.
Engineers: Their Technical and Practical Training. Sir A. Trevor Dawson.
Summary of a lecture before the Jun.
Inst. of Engrs. 1500 w. Prac Engr—Dec.
19, 1912. Serial. 1st part. No. 38870 A.

The Present Opportunities and Consequent Responsibilities of the Engineer. Alexander C. Humphreys. Reviews the opinions of other prominent engineers, and former presidents of the society, and urges co-operation of all professions for effective service. 13800 w. Jour Am Soc of Mech Engrs—Jan, 1913. No. 39348 D.

The Status of the Engineer. A letter from Percival M. Churchill, with editorial

Engineering Societies

Factory Inspection

4500 w. Eng News-Jan. 2. No. 38782. 1913.

The Status of the Engineering Profes-L. B. Stillwell, and Samuel Whin-Papers read before Am. Inst. of Consulting Engrs. 4000 w. —Jan. 23, 1913. No. 39873. Eng News

Brief Review of Engineering Practice and Personal Experience in Latin America Thirty-two Years, 1880-1912. Elmer L. Corthell. 12000 w. Jour W Soc of Engrs—Dec. 1912. No. 39335 D.

The Engineer in the Building of the Personal State of t

Republic. Isham Randolph. Brief review of the work accomplished by engineers. 5500 w. Jour Fr Inst-March, 1913. No. 40822 D.

Inaugural Address of the President. Arthur Valon. A discussion of questions affecting the engineering profession. 7500 w. Soc of Engrs—March, 1913. No. 40850 N.

Civic Fields for the Service of Men Trained as Engineers. From an address by O. V. P. Stout. Reviews some of the fields in which the engineer can render service and find employment outside of design and construction. 2500 w. Engrg & Con—May 7, 1913. No. 41907.

Developing Chief Engineers in Swift's

Chicago Plant. Describes the training given and the plant in which they are trained. Ills. 3000 w. Prac Engr, Chicago—Sept. 15, 1913. No. 45133.

Engineering Societies

The Verein Deutscher Ingenieure. outline of the work and organization of the largest society of its kind. 2500 w. Engng—Dec. 20, 1912. No. 38890 A.

Engineers' Salaries

Standardizing City Engineers' Salaries. A report prepared by a committee of Munic. Engineers of the City of New York for submission to the Board of Estimate and Apportionment. 3500 w. Eng Rec.—May 3, 1913. No. 41848.

Estimating Cost-Estimating and Rate Fixing in the General Shop. Discusses methods of estimating, the relation to organization and to production in this first article. 5000 w. Engag—Feb. 7, 1913. Serial, 1st part. No. 39915 A.

The Quantity System of Estimating. Alexander Wright. Abstract of an address to the Gen. Contractors' Assn. Explains the loss occasioned by the present method, and the advantages of the new system. 3000 w. Con Rec—July 23, 1913. No. 43869.

Exhibition

The Physical Society's Exhibition of Scientific Apparatus. Brief descriptions of exhibits. 4000 w. Engng-Dec. 20. 1912. Serial. 1st part. No. 38892 A.

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A Remarkable Review of Building Methods Old and New. Robert Grim-shaw. Brief illustrated account of the Leipzig Building and Trades Exposition. 1500 w. Sci Am—Aug. 9, 1913. No. 44215.

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The Illinois System of Factory Inspection. Edgar G. Davies. Read at the Co-operative Safety Cong. Explains what has been accomplished in various States, legislation in Illinois, the enforcement of the laws, etc. 3500 w. Ind Wld—May 5, 1913. No. 41840.

Filing Methods Industrial Diseases

Filing Methods

Records for the Works Publication Bureau. A. D. Williams. Explains a system for keeping track of photographs, cuts and the literature issued by a manufacturing company. 2000 w. Ir Age— May 1, 1913. No. 41800 C.

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A Library Scheme for Catalogues and Price Lists. Detailed description. 8000 w. Elec Rev, Lond—Oct. 25, 1912. No. 37287 A.

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Finance

The Engineer's Relation to Finance. Otis L. Williams. Remarks on changes in affairs and the increased responsibility of engineers requiring knowledge of many factors entering into the problems to be solved. 4500 w. sib Jour of Engng—March, 1913. No. 40922 C. Gold Production in Relation to Human-

Gold Production in Relation to Humanity; A Study of the Question: Has Gold Depreciated in Value? Eustace M. Weston. An explanation of the depreciation theory and a discussion of the effects of production on credit. 9500 w. Jour Chem, Met, & Min Soc of S Africa—April, 1913. No. 42871 E.

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Forestry
Forest-Development and Preservation.
R. H. Campbell. Read before the Assn.
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some adaptations necessary that the tree
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The Port of Galveston. Warren Willsey Peters. Discusses its relation to the industrial and agricultural development of the South. 2200 w. Sci Am Sup—Oct. 18, 1913. No. 45922.

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Germany's Industrial Policy in Contrast to American Tendencies. Franz Erich Junge-Hermsdorf. A study of the differences of resources, ideals, and methods. 5500 w. Engineering Magazine—Feb., 1913. No. 39425 B.
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An Extension of the Dewey Decimal System of Classification Applied to the Engineering Industries. L. P. Breckenridge and G. A. Goodenough. A complete classification for most engineering industries. 117 pp. Univ of Ill, Bul No. 9—Nov. 11, 1912. No. 39547 N. Methods of Increasing the Use of Technical Literature. Louise B. Krause. A.

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The Laws Applying to Industrial Accidents (L'Application de la législation sur les accidents du travail). A review of the French laws affecting industrial accidents. 3500 w. Rev d'Econ Industrielle—Dec. 20, 1912. No. 39064 N.

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Recent Advances in Industrial Chemistry. Raymond C. Benner. Brief review of the more important recent discoveries. 1800 w. Min & Sci Pr—Nov. 16, 1912. No. 87718.

Manufacturing Problems. F. D. Bell. Considers numerous cases where a chemist's services are necessary in solving manufacturing problems. Ills. 2500 w. Sci Am—June 28, 1913. No. 43198.

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Lead Poisoning in Potteries, File Works, and Porcelain Enameled Sanitary Ware Factories. Alice Hamilton. A study of these industries, their dangers, sanitary conditions, extent of lead poisoning, typical cases, etc. 95 pp. U S Bureau of Labor, Bul 104—Aug. 7, 1912. No. 39548 N.

Hygiene of the Painters' Trade. Alice Hamilton. Information concerning the physiological effects produced by the constituents of paint, and possible legislation for the protection of painters. 66 pp. U S Dept of Labor—No. 120.

No. 45172 N.

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The Solubility of White Lead in Human Gastric Juices and Its Bearing on the Hygiene of the Lead Industries. A. J. Carlson and A. Woelfel. Report of an investigation. 3300 w. Am Jour of Pub Health—Aug., 1913. No. 45536 C.

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The Growth of Modern Industrialism. Edwin C. Eckel. Gives an analysis of the factors in a natural evolution. 6000 w. Engineering Magazine—May, 1913. No. 42486 B.

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Modern Social Hygienic Systems in Chemical Plants (Moderne sozial-hygienische Einrichtungen in Chemischen Werken). F. Quincke. Illustrated account of the precautions taken at the Friedr. Bayer & Co. plant near Cologne, also description of the company's welfare system. 1700 w. Zeitschr des Ver deutscher Ing—Sept. 28, 1912. No. 37442 D.

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Inspection Methods That Accomplish Maximum Good. Edw. J. Knapp. Gives practical suggestions for inspector, purchaser and manufacturer. 4500 w. Engineering Magazine—Aug, 1918. No. 43916 B.

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Invention and Social Problems. Ira N. Hollis. An address delivered before the graduating class. 6500 w. Jour Worcester Poly Inst—July, 1913. No. 43995 C.

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Overtime Labor in the Iron Industry (Die Ueberarbeit in der Grosseisenin-

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Industrial Life and Humanity. William C. Redfield. Address at the N. Y. Alumni Assn. An interesting discussion of labor conditions. 4000 w. Jour Worcester Poly Inst—Jan., 1913. No. 39438 C.

Syndicalism or Co-operation. Dr. James Douglas. A discussion of the latest and greatest labor problem. 5000 w. Engineering Magaine—March, 1913. No. 40080 B.

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High Cost of Living Is High Cost of Labor. A discussion of economic problems and present conditions. 6000 w. Ir Age—Feb. 20, 1913. No. 39926 C.

The Problem of the Efficiency of Labor. Howard T. Lewis. Discusses the Progressive development of economic efficiency, the attitude of labor unions, and related subjects. Pop Sci M—Feb., 1913. No. 40144 C.

Workmen's Compensation Laws in the United States. Charles E. Hodges. Abstract of a paper read before the Nat. Assn. of Cotton Mfrs. Discusses the movement. Thirteen States have adopted such laws. 3000 w. Ind Engng—Feb., 1913. No. 39748 C.

The Fortunate or Happy Conditions for a Life of Labor. Charles W. Eliot. Address at Hot Springs, Va., before the Elec. Mfrs. Club. Discusses fundamental conditions affecting the relations of employer and employee. 6000 w. Elec Rev & W Elect'n—March 22, 1913. No. 40776.

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The Coal Strike and the Evolution of Syndicalism in England (La grève noire et l'évolution des syndicats en Angleterre). Maurice Alfassa. A comprehensive review of the labor situation in England. 22500 w. Bull Soc d'Encour—Jan., 1913. No. 40587 E + F.

Labor Legislation of 1912. Lindley D. Clark. Reviews briefly the contents of the laws passed, showing also some changes made in amendatory legislation. 263 pp. U S Bureau of Labor—Dec. 13, 1912. No. 41704 N.

Decisions of Courts and Opinions Affecting Labor, 1912. Reviews opinions of the Attorney-General, and court de-

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Gives text of the law to provide for nacisions. 184 pp. U.S. Bureau of Labor, No. 112-March 5, 1913. No. 42484 N.

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Selection and Employment. Francis Lister Jandron. Discusses the possibilities due to careful selection and employment of men. 3500 w. Enginee Magazine—July, 1913. No. 43263 B. Engineering

Labor Unions and the Railroads. J. O. Fagan. Abstracted from the N. Y. Times. On the means used by the organizations to further their ends, and effects of the public attitude toward the situation. 3500 w. Ry Age Gaz-June 13, 1913. No. 42818.

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A Pension Plan for Employees in the Machinery Trades. William Lodge. Considers the pension system basis, sources of savings, retiring age, and related subjects. 3500 w. Ind Engng—July, 1913.

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Industrial Agreements. Report of the Industrial Council upon the enquiry made into certain matters connected with industrial agreements. 4000 w. Col Guard—Aug. 8, 1913. No. 44457 A.

Juvenile Labor Exchanges and Apprenticeship Bureaux in Germany. Edith Edlmann. A discussion of the apprenticeship problem and the various systems and schemes for its solution. 3500 w. Contemporary Rev-Aug., 1913. 44340 D.

A National Gazette of Unemployed. George Young. Outlines a scheme for State action to deal with the problem of unemployment. 3500 w. En Aug. 1, 1913. No. 44323 A. Unemployment Insurance. Engr, Lond-

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To What Age Does the German Ironworker Live (Wie alt wird der deutsche Eisenarbeiter)? J. Reichert. A social study comprising a résumé of statistics. 4200 w. Stahl u Eisen—July 10, 1913. No. 44604 D.

Labor Inspection and Night Labor (L'inspection du travail et le travail de nuit). L. Bidault des Chaumes. A discussion of the legality of inspection at Genie Civil-Aug. 16. 1700 w. night. 1913. No. 45351 D.

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A Novel Plan for Solving the Railway Labor Problem. George A. Clark. Outlines a plan for having labor represented in the management of industries. 1500 Ry Age Gaz—Oct. 10, 1913. 45778.

Suggested Means for Holding Labor-Discussions by different writers of methods which have assisted in retaining laborers, showing that wages are not the only consideration. 4300 w. Ry Age Gaz—Oct., 24, 1913. No. 46199.

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Legal Knowledge Essential to Engineers. W. A. J. O'Meara. Abstract of a lecture to the students of Faraday House. Discusses points in the law liable to be of interest to engineers in practice. 5500 w. Elect'n, Lond—Aug. 15, 1913. No. 44710 A.

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Scientific Shop Management on the Taylor System. G. C. Allingham. Describes the system of motion study introduced by F. W. Taylor, and the objects of this system. 2500 w. Elect'n, Lond—Nov. 1, 1912. No. 37389 A.

The Present State of the Art of Industrial Management. Gives the majority and minority reports of the Sub-Committee on Administration. 7500 w. Jour Am Soc of Mech Engrs—Nov., 1912. No. 37875 D.

The Duties of the Factory Superintendent. Stuart Dean. Outlines details of department operation, graphical production of records and their use, etc. 4000 w. Ir Age—Nov. 21, 1912. No. 37725 C.

Making a Success of the Machine Shop. Stuart Dean. First of a series of articles on machine shop operations. Discusses how losses may be prevented and shop methods. 4000 w. Ir Age—Nov. 7, 1912. No. 37748 C.

Plant Economy and Individual Efficiency (Betriebsökonomie und Privatwirtshaftslehre). C. M. Lewin. A study on the economic operation of factories. Diagrams. 2700 w. Zeit f Werkzeug—Oct. 5, 1912. No. 37462 D.

Production System for a 200-Employee Plant. Stuart Dean. Tenth of a series of articles. Deals with methods of lessening clerical work in an establishment having foundry and machine shop operations. 5000 w. Ir Age—Dec. 19, 1912. No. 38276 C.

Scientific Management in Isolated Plant Operation. P. R. Moses. Dis-

cusses the practical operation of efficiency principles in the power-house. 3500 w. Engineering Magazine—Feb., 1918. No. 39427 B.

The Science and the Art of Management. F. G. Coburn. Urges training in the psychological principles of handling men. 1500 w. Ir Age—Jan. 23, 1913. No. 39324 C.

The Permanence of Workmen's Training. H. L. Gantt. Excerpt from discussion before the A. S. M. E. in report on the "Present State of the Art of Industrial Management." 3000 w. Am Mach—Jan. 2, 1913. No. 38736.

Efficiency Management in a Gas Tractor Plant. Explains how work is scientifically routed in works which embrace foundries, machine and erecting shops and other departments. Ills. 4000 w. Ir Trd Rev.—Jan. 2, 1913. (Special.) No. 38742 D.

Production Efficiency in Typewriter Building. Describes methods developed at the plant at Woodstock, Ill., for manufacturing, assembling, etc. Ills. 2500 w. Ir Age—Jan. 2, 1913. No. 38758 C.

Notes on the Taylor System of Organization for Machine Shops (Note sul sistema Taylor per l'organizzazione del lavoro nelle officine). Gina Scanferla. A résumé of the Taylor system of efficient production in the workshop. Serial. 1st part. 2100 w. Industria—Dec. 15, 1912. No. 39096 D.

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The Principles of Scientific Management. Frederick W. Taylor. Abstract of an address in Toronto. An explanation of scientific management and its principles. 3300 w. Ap Sci—Jan., 1913. No. 39946 C.

Investigating an Industry. William Kent. Discusses scientific investigation as the foundation of scientific management. 3000 w. Ind Engng—Feb., 1913. Serial, 1st part. No. 39746 C.

Practical Principles of Rational Management. A. Hamilton Church. The first of a series of articles. This paper defines three basic principles, and four great divisions of industrial activity, followed by ideas on the best design of the product. 5400 w. Engineering Magazine—Jan. 1913. No. 38678 B.

Practical Principles of Rational Management. A. Hamilton Church. This second article of a series discusses the machine, as the pivotal point in making

earnings. 4000 w. Engineering Magazine—Feb., 1913. No. 39424 B.
Practical Principles of Rational Management. A. Hamilton Church. Third article of a series discussing the work and how it is handled. 6500 w. Engineering Magazine—March, 1913. No. 40085 B.

Practical Principles of Rational Management. A. Hamilton Church. This fourth article of a series considers the man. A study of personal effectiveness. 6000 w. Engineering Magazine—April, 1913. No. 40908 B.

Practical Principles of Rational Man-A. Hamilton Church. fifth article of a series considers what to

metal action of a series considers what we record. 5000 w. Engineering Magazine
—May, 1913. No. 41627 B.

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Discussion of Reports of Sub-Committee on Administration on the Present State of the Art of Industrial Management. 28500 w. Jour Am Soc of Mech Engrs—March, 1913. No. 40439 D. Relationship of Scientific Management

to Labor. John P. Frey. From a paper before the West. Economic Soc. cusses some of its unscientific features. 2500 w. Ir Trd Rev-April 17, 1913. No.

Training Engineers in the Science of Management. Bruce W. Benedict. An outline of the training given in the laboratory courses of the University of Illinois. 3500 w. Technograph—Feb., 1913. No. 41710 C.

Efficiency in Railway Management. L. W. Wallace. Shows that the railways have long given attention to economy of operation and that they are among the best managed properties in the United States. 4000 w. Indiana Engng Soc-1912. No. 41735 N.

Some Notes on the Scientific Management of Labor in Railway Maintenance of Way Departments. A. Swartz. Suggestions for efficient work. 2000 w. Engng & Con—April 16, 1913. No. 41275. F. W. Taylor's Principles of Methodical Instruction in Work of All Sorts (F. W. Taylor's Coundaints methodicalon April 1913.

W. Taylors Grundsätze methodischer Anleitung bei Arbeitsvorgängen jeder Art). F. Neuhaus. A brief outline of the Taylor ideas in scientific management. 4800 w. Zeit des Ver deutscher Ing-Mar. 8, 1913. No. 41459 D.

Principles of Scientific Organization in the Workshop (Principii d'organizzazione scientifica delle officine). Giulio Revere. An outline of the methods proposed by F. W. Taylor, and the motion studies of F. B. Gilbreth. 4000 w. Monit Tec-Mar.

20, 1913. No. 41533 D.

The Relation of Detailed Planning and the Cost of Production. C. A. Harrington. Gives practical outlines of a system for small shops. 3000 w. Engineering Magazine—May, 1913. No. 42488 B.

Industrial Management. Additional discussion of reports of sub-committee in administration on the present state of the art of industrial management, with the closure. 2500 w. Jour Am Soc of Mech Engrs-May, 1913. No. 42410 D.

Scientific Management. A. G. Christie. Defines the expression and discusses the aims and principles. 3500 w. Wis Engr -April, 1913. No. 42331 C.

William Scientific Management. Archie Weldin. Discusses the possibility of its application to coal mining, considering some of the advantages and difficulties. 2000 w. Col Engr—May, 1913. No. 44832 C.

The Political Economy of Production. Henri Le Chatelier. Introduction to the French edition of F. W. Taylor's book. A plain statement of the relation existing between production, wages, purchasing power and management. 4500 w. Ind Engng—May, 1913. Serial, 1st part. No. 41952 C.

Industrial Management. Editorial review of the report of the Sub-committee on Administration, appointed by the A. S. M. E. 2000 w. Engng—June 27, 1918. No. 43642 A.

Shortcomings of Small Concerns. A. Harrington. Considers they are not as well managed as the large companies. 2500 w. Ir Age-July 10, 1913. No. 43494 C.

System for the Drafting Office, Pattern Shop and Foundry. F. Tissington. Outlines methods of management that save time and eliminate mistakes. 2000 Mach, N Y—July, 1913. No. 43365 C.

System in the Engineering Department. V. J. Moncrieff. Discusses characteristics needed in the systems used in automobile plants. 6000 w. Horseless Age—July 2, 1913. No. 43442.

An Effective Follow-up System. A. L. Valentine. Explains a system for recording the progress of small manufactured parts. 3000 w. Mach, N Y-Aug., 1913. No. 44076 C.

The New Element in the Art of Management. John Calder. Defines what is known as the "scientific method," and considers the principles which underlie its successful practice. 4000 w. Stevens Ind—July, 1913. No. 44327 D. Management. William Lodge. Sug-

gestions from the writer's experience.

4000 w. Jour of Eff Soc-July, 1913. No.

Management. Harriet Fisher Andrew. Report of experience from a woman having charge for fourteen years of forty to forty-five men in shop work. 2200 w. Jour of Eff Soc-July, 1913. No. 45554 D.

The Tool Room in Scientific Management. Robert Thurston Kent. Shows the importance of the relation existing between the tool room and the shop as regards maximum production. Ills. 3500 w. Ir Age—Sept. 4, 1913. No. 44954 C.

Factory Labor (Travail d'usine). Abaut. General remarks on the management of shops: organization, building plan, central bureau, and control. 14000 w. Rev de Metall—Sept., 1913. No. 45329 H.

"Put Your House in Order." Frederic A. Parkhurst. Considers the science of management as applied to the foundry. 3500 w. Am Found Assn-Oct., 1913. No. 46269 N.

The Development of Systems of Con-F. R. Carnegie Steele. The tendency toward intensified production calls for a development in the science of accounting that executives may at any time know what is the condition of the business. 4000 w. Jour of Acc-Oct., 1913. No. 46117 C.

Taylor's Principles of Management and Their Adaptations to European Conditions (Taylor'schen Grundsätze der Betriebsleitung und ihre Verwertung für europ. Verhältnisse) Herbert W. Hall. A discussion of the variance of labor conditions in Europe and America and consequential difficulties in uses of the Serial. 1st part. 1200 w. Schweiz Bau - Sept. 13, 1913. 46032 D.

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Motion Study in the Box Shop. Robert Thurston Kent. Explains how an effort to cut down the internal transportation movements effected a 50 per cent increase in capacity. 3000 w. Ind Engng
—Aug., 1913. No. 44155 C.

Micro-Motion Study in Industry. Rob-t Thurston Kent. Discusses the progert Thurston Kent. ress of efficiency-producing methods in 1912. Ills. 4500 w. Ir Age—Jan. 2, No. 38754 C.

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Organization

The Organization of Large Commer-Industrial Establishments. and Benno Orenstein. Describing the duties of the central office, and its sub-departments; purchase, engineering, factory, plant management, sales, advertising, etc. 5400 w. Engineering Magazine— Jan., 1913. No. 38681 B. Industrial Organization.

Hugo Diemer. Detailed discussion describing the methods of procedure to be followed. Also general discussion. 10,000 w. Jour Engrs' Soc of Penn—Oct., 1912. No. 38221 C.

Organization. T. C. Roberts. An outline of essentials from engineering practice. 2500 w. Met & Chem Engng-Feb., 1913. No. 39688 C.

The Formation and Organization of a Large Manufacturing Corporation. C. B. Auel. Based on a lecture prepared with the aim of explaining the subject of works management to comparatively young men. 2500 w. Elec Jour-April, 1913. No. 41213.

The Technical Man and the Steel orks. W. E. Snyder. A discussion of methods aiming at the improvement of the operating personnel. 9000 w. Pro Engrs' Soc of W Penn—March, 1913. No. 41688 D.

Orders and Methods of Handling. C. B. Auel. Second of a series of articles on works management, giving the methods in general use. 4500 w. Elec Jour -May, 1913. No. 42435.

Force Organization in the Railroad Repair Shop. Ernest Cordeal. Suggestions for the adjustment of men and functions to present requirements. 4500 w. Engineering Magazine — July, 1913. 43099 B.

Organizing a New-Business Depart-E. L. Callahan. Offers suggestions for the organization and management of electric light and power com-

panies. Ills. 4500 w. Elec Rev & W Elect'n—May 31, 1913. No. 42651. Organization of an Appliance Depart-ment. B. E. Rowley. Suggestions and discussion of advantages. 8000 w. Can Elec Assn-June, 1913. No. 44820 N.

Engine House Efficiency. Extracts from a committee report at the convention of the International Ry. General Foremen's Assn. Deals with the organization, cost of repairs, operation, etc. 4500 w. Ry & Engng Rev—Aug. 2, 1913. No. 44151.

The Scientific Organization of Human Labor (L'organisation scientifique du travail humain). Jules Amar. Laboratory experiments on the fatigue of workmen Patent Laws Prices

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Patent Laws

The Proposed Patent Law Revision. Gilbert H. Montague. A thorough discussion, from a legal standpoint, of the present patent system, reviewing and discountenancing the proposed substitute to the Oldfield Revision and Codification of the Patent Statutes. 18 pp. H Law Review—1912. No. 38479 N. Harvard

Outline of the Imperial Ruling on Patent-Law Revision, models and samples of Wares Required by Law (Entwurfe der Reichsregierung zur Abänderung des Patentgesetzes, des Gebrauchsmustergesetzes und des Warenzeichengesetzes). Abstracts of proposed German laws. 11000 w. Gläsers Ann—July 15, 1913. No. 44628 D.

Recent Notes on the Study of Patent Possibilities (Neue Beiträge zur Lehre von der Patentfähigkeit). Dr. Schanze. A study of German Laws as expounded by Kohler and others. 5500 w. Gläsers Ann-Aug. 1, 1913. No. 44629 D.

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Continuity. Extracts from the presidential address delivered by Sir Oliver Lodge to the British Assn. Discusses present tendencies in scientific research. and urges the belief in ultimate continuity as essential to science. 6500 w.

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Elect'n, Lond-Sept. 12, 1913. No. 45287 Å.

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A New Development in Factory Study. Illustrates and describes the use of the Route Model as a method of investigation. 2500 w. Ind Engng — Feb., 1913. No. 39747 C

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Time Study and Task Work Explained. Sanford E. Thompson. Read before the Western Economic Soc., Chicago. Explains what time studies attempt to establish and the object of scientific methods. 3500 w. Ir Age-April 24, 1913. No. 41585 C.

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How to Make a Time Study. C. E. Knoeppel. Explains the possibilities of

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Making Forms and Moldings at the Iserlohn Metallurgical Trade School (Die Ausbildung der Former und Metallgiesser an der Königl. Fachschule für Metallindustrie zu Iserlohn). H. Krause. Gives some of the results of the work of the school. Ills. 2800 w. Giess-Zeit -Oct. 15, 1912. No. 37414 D.

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Two Conflicting Theories of Valuation of Public Service Companies. Halbert P. Gillette. Discusses theories of rate regulation and the bearing upon appraisals. 3000 w. Engng & Con-Dec. 11, 1912. No. 38142.

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particularly the salaries of charge engi-

neers and switchboard attendants in England, and the efforts made for betterment. 1500 w. Elec Rev, Lond—Feb.

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Judicial Interpretation of the Minimum Wage in Australia. M. B. Hammond. Aims to make clear the theory underlying the minimum wage as it is finding expression in Australia and New Zealand. 10800 w. Am Ec Rev—June, 1913. No. 43282 H.

Wage Questions in Metallurgical Practice (Lohnfragen in hüttentechnischen Betrieben). Eduard Juon. A study of the systems of premiums suggested and practiced by Taylor and others, and some proposed modifications. 5600 w. Stahl u Eisen—June 12, 1913. No. 43506 D.

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The Determination of Wages in the Silesian Coal District (Ueber Lohnzahlung im schlesischen Steinkohlenbergbau). W. Nimptsch. The wage rate for the various classes of workmen and its determination. 6400 w. Glückauf-Aug. 30, 1913. No. 45398 D.

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Wage Systems

A Simple Bonus System and Its Results. W. L. Myles. Reports its operation by Standard Motor Construction Co., Bayonne, N. J. 2000 w. Ir Age—Jan. 2, 1913. No. 38756 C.

The Payment of Employees in Cash. Description of the method used on the Pennsylvania lines, west. 3000 w. Ry Age Gaz—Jan. 31, 1913. No. 39598.

Bonus and Rating for Works' Executives. John Nelson. Explains system developed by The Royal Typewriter Co., Hartford, Conn., for rewarding efficiency and reducing remissness. 2500 w. Ir Age—May 15, 1913. No. 42082 C.

Casting Cleaners' Wages on the Premium Basis. A. W. Gregg. Read before the Am. Found. Assn. Explains the method adopted in a large western steel foundry. 2000 w. Foundry-May, 1913. No. 41852.

Profit sharing; Some Practical Methods in Modern Industries (La participation aux bénéfices; Les méthodes practiques dans l'industrie moderne). Maurice Bellom. A summary of eleven basic methods in use in France and their applications. 6600 w. Tech Mod—May 1, Tech Mod-May 1, 1913. No. 42176 D.

A Good Showing Under the Bonus Plan of Pay. W. L. Myles. Shows how lower costs, higher wages and greater efficiency were obtained. 1800 w. Ir Trd Rev-Aug. 7, 1913. No. 44227.

Piecework and Bonus Systems of Wages Payment. Discusses the various systems, their difficulties and benefits. 3000 w. Elec Rev, Lond—Aug. 8, 1913. No. 44444 A.

Piece Work System Applied to City Forces. J. E. Tupper. An account of work carried out at Pomeroy, Wash., installing a sewerage system, and showing the practicability of piecework payment. 2500 w. Munic Engng-Aug., 1913. No. 44391 C.

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Scientific Management and the Wage Problems. C. Bertrand Thompson. Condensed from paper read at the Management Conference of the W. Ec. Soc. Re-

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The Introduction of Piece Rates in the Wage System of Shop Workers (Die Einführung der stückzeit in die Lohnordnung der Werkstattenarbeiter) Herr Füchsel Explaining the system math-Füchsel. Explaining the system, methods of introduction, and examples of practice. 4000 w. Glaser's Ann—Sept. 15, 1913. No. 46014 D.

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TRIAL ECONOMY.

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The Welfare Work on One City System. H. A. Bullock. Abstract of paper read before the Am. Elec. Ry. Assn. An account of the work in this field by the Brooklyn Rapid Transit System. 3000 w. Elec Ry Jour—Oct. 16, 1913. (Daily Ed.) No. 45929.

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Accident Prevention and Workmen's Compensation. Fred C. Schwedtman. Deals with employers' liability and compulsory insurance. Ills. 7500 w. St Louis Ry Club—Oct. 16, 1912. No. 37683.

The Washington Workmen's Compensation Act and the Results of Its First Year of Administration. L. R. W. Allison. Notes from a study made of this law and its administration. 2500 w. Eng News-May 15, 1913. No. 42094.

Kentucky Mine's and Workmen's Compensation. K. U. Meguire. Describes the advantage of that form of compensation which divides the losses evenly among the operators of the state, regardless of the mine where the accident occurred. 2500 w. Coal Age-June 14, 1913. No. 42837.

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John H. Wallace. Information concern-

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MARINE AND NAVAL ENGINEERING

Anchor Line Battleships

No. 38586.

Anchor Line

The Story of the Anchor Line. Illustrated review of its history. 3000 w. Marine Engr & Nav Archt—Aug., 1913. No. 44310 A.

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Armor and Ships. John W. Gulick. A brief résumé of twenty years progress and its effect on coast defense. 4000 w. Jour U S Art—Nov.-Dec., 1912. No. 38649 D.

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The Underwater Horizontal Hydraulic Ash Discharger on the U. S. Colliers Proteus and Nereus. F. P. Palen. Drawings and description of the dischargers installed. Ills. 2500 w. Jour Am Soc of Nav Engrs—Aug., 1913. No. 45166 H.

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Hydraulic Ash-Expeller for Ships. Illustrated description of under water-line ash expellers for trans-Atlantic liners and the operation. 3500 w. Engng—May 16, 1913. No. 42536 A.

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Methods and Cost of Barge Construction of Creosoted Lumber at U. S. Boatyard, Fountain City, Wis. C. W. Durham and A. E. Hageboeck. Describes the material and details of construction. Ills. 2000 w. Engng & Con—Dec. 18, 1912. No. 38311.

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The Electrical Equipment of a Modern Battleship. H. A. Hornor. Suggests certain modifications to the present equipment, based on land usages and their adaptation for marine purposes. Ills. 3500 w. Jour Fr Inst—Aug., 1913. No. 44541 D.

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The Injury to the Hull of the U. S. S. "Arkansas" by Grounding. Illustrated

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Progress of Warships and Machinery Under Construction in England. Report of the progress in England during the last six months. 1200 w. Engr, Lond —Jan. 17, 1913. No. 39484 A. The French Dreadnoughts Paris and

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The Brazilian Battleship "Rio de Janeiro." Illustrated detailed description of this vessel and its equipment, with dis-

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The Arrangement of the Machinery in Warships. Giuseppe Rota. Trans. from the Italian. Gives diagrams illustrating the successive typical arrangements followed in the Italian Navy from 1858, with remarks. 1200 w. Engng—Feb. 14, 1913. No. 40135 A.

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Recent Development in Battleship Type. Alan H. Burgoyne. Read before the Inst. of Nav. Archts. Reviews the rapid evolution of type in progress, analyzing the reasons that are leading to a closer international unity of design. 4500 w. Engng—March 14, 1913. No. 40823 A.

The Influence of Air Pumps on the Military Efficiency of Turbine-Driven Warships. D. B. Morison. Read before

Boilers

Battleships

the Inst. of Naval Archts. States the requirements and illustrates and describes types of air pumps. 4000 w. Engng—March 14, 1913. No. 40824 A. Great Britain's Mighty Warships. In-

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Multiple Gun-Turrets in Warships. Illustrated description of the arrangement of guns on battleships recently completed for Italy, Austria, and France. 1600 w. Engng—Feb. 28, 1913. No. 40485 A.

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Twin-Screw River Gunboat for China (Doppelschrauben-Flusskanonenboot für China). Detailed description of shallow-draft vessel for river service, built at the Vulcan Yards, Hamburg. Ills. 2200 w. Zeit des Ver deutscher Ing—April 19, 1913. No. 42139 D.

H. M. Torpedo Boat Destroyers "Shark," "Sparrowhawk," and "Spitfire." Illustrates one of the three vessels and the twin-screw Parsons impulse and reaction turbines, giving description. 1000 w. Engng—June 6, 1913. No. 42885 A.

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Armored River Monitors for Brazil. Drawings and description of the first of three vessels under construction. 1500 w. Engr, Lond—June 20, 1913. No. 43397 A.

Steam Trials of the Chilian Torpedo-Boat Destroyer "Almirante Lynch." Brief description of the ship and report of trials. 800 w. Engng—July 18, 1918. No. 43967 A.

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See also Cruisers, under MARINE AND NAVAL ENGINEERING.

Boathouses

Concrete Pontoons for a Boathouse. D. C. Findlay. Illustrated description of the constructional features of water-tight boxes of concrete serving as pontoons under a floating boathouse. 1200 w. Concrete-Cement Age—Sept., 1918. No. 45250.

Boats

See also Reinforced Concrete, under MARINE AND NAVAL ENGINEERING.
Boilers

Recent Experiences of Babcock & Wilcox Boilers for Marine Purposes. James H. Rosenthal. Read before the Inst. of Marine Engrs. Reviews the development of this type of boiler. Ills. 3000 w. Mech Engr—March 14, 1913. No. 40816 A.

Practical Marine Boiler Design. John

Bulkheads Cruisers

Gray. Information for apprentices and young journeymen boiler makers, with practical questions. Ills. 2500 w. Boiler Maker—April, 1913. Serial. 1st part. No. 41170.

Practical Notes on the Design and Construction of Marine Boilers. A detailed consideration of points which make for efficiency in working and lessen the susceptibility to defect. 2000 w. Mech Wld July 11, 1913. Serial, 1st part. No.

43897 A.

Bulkheads

Note on the Strength of Watertight Bulkheads. A. J. Murray. Considers some of the problems needing investigation in regard to the strength of bulkheads, and the methods of calculating. 1500 w. Int Marine Engng—Dec., 1912. No. 37970 C.

The Watertight Subdivision of Ships. Discussion of J. Bruhn's paper. 6000 w. Trans Inst of Engrs & Shipbldrs in Scotland—Dec. 17, 1912. No. 40852 N.

Watertight Subdivision. Arthur R. Liddell. Germany's views on the subject. Reviews Prof. Flamm's paper and the

discussion. 1600 w. Engr, Lond—May 23, 1913. No. 42756 A. Water Tight Bulkheads and Their Strength. Discusses the part the bulkhead plays in the structural strength of 1800 w. Marine Engr & the vessel. Naval Archt—Oct., 1913. No. 45753 A.

Canal Boats

Canadian Canaler Glenmavis. Drawings and description of an Irish-built freighter for lake trade. First to be built on the Ballard system. 800 w. Marine Rev—Aug., 1913. No. 44283 C.

Cargo Ship

The Cargo Ship "France." Illustrated detailed description of a vessel built of steel throughout and propelled by inter-nal-combustion engines. Plate. 2500 w. Engng—Oct. 10, 1913. No. 45982 A.

Cargo Steamer

A Geared Turbine Cargo Steamer. Details of the installation are illustrated and described, and report of competitive trial is given. 1600 w. Engr, Lond-March 7, 1913. No. 40711 A.

Cavitation

On the Criterion for the Occurrence of Cavitation. Dr. L. Gumbel. Read before the Inst. of Naval Archts. Discusses briefly the cavitation in screw-propellers and on what it depends. 1500 w. Engng
—July 18, 1913. No. 43965 A.

Colliers

U. S. Fleet Collier Orion. R. L. Ir-Illustrated description of the vessel with report of trials. 6000 w. Jour.

Am Soc of Naval Engra-Nov., 1912. No. 38300 H.

Self-Discharging Collier. Frederick C. Coleman. Illustrated description of the steamer Herman Sauber, constructed with belt conveyor for unloading. 1500 w. Marine Rev—Dec., 1912. No. 38161 C.
See Ship Coaling, under MARINE AND

NAVAL ENGINEERING.

Compasses
The Sperry Gyro Compass. Brief explanation of the theory and illustrated description of the development. 3800 w. Elec Rev. Lond — June 6, 1913. 42875 A.

Compensation of Compasses. William C. Ward. A study of the influences which affect the compass on iron and steel vessels. 3500 w. Marine Rev-July, 1913.

No. 43696 C.

The Problem of Directing Modern Ships and Some Instruments for Aerial Navigation (Problème de la direction des navires modernes et des appareils de navigation aérienne). L. Mascart. Outlines the principles and operation of the dygograph. Ills. 6800 w. Mem Soc Ing Civ de France—June, 1913. No. 45301 G.

Connecting-Rods

The Design of Marine-Engine Connecting-Rods. A. M. Daniels. Gives tables and calculated data for eight engines, suggesting a systematic method of calculation. 1000 w. Mech Wld-April 4, 1913. Serial. 1st part. No. 41233 A.

Corrugated Ship

The Corrugated Ship. G. S. MacIl-Explains the origin of the idea, describes the vessel, states the claims made, considers the effect of corrugations, advantages claimed, with suggestions. Also general discussion. 9800 w. Jour Roy U Serv Inst—Nov., 1912. No. 38222 N.

Cruisers

The Chinese Training Cruiser "Chao Ho." Illustrated description of the vessel and its equipment, with report of trials. 1500 w. Engng-March 28, 1913. No. 41142 A.

The Japanese Battle-Cruiser "Kongo." Brief description with report of trials. Ills. 1800 w. Engng—May 23, 1913. No. 42778 A.

New Chinese Training Cruiser "Ying Swei." F. C. Coleman. Illustrated detailed description with report of trials. 1000 w. Int Marine Engag-June, 1913. No. 42599 C.

The Japanese Cruiser "Kongo" (Le Auirassé-Croiseur japonais "Kongo"). M. Gouriet. General description, offensive, defensive and propulsive power and

Gunard Line

results of trials. Ills. 2400 w. Genie Civil—July 19, 1913. No. 45340 D.

Cunard Line

The Story of the Cunard Line. Historical review, with illustrations of early and recent types of vessels. 3000 w. Marine Engr—May, 1913. No. 41990 A. Davits

The Babcock and Wilcox Boat-Lowering Gear. Drawings and descriptions of means of lowering boats into the water on the lee or protected side. 2500 w. Engag—Aug. 15, 1913. No. 44723 A.

Deck-Houses

On Large Deck-Houses. J. Foster King. Read before the Inst. of Nav. Archts. Discusses features of design. Ills. 2500 w. Engng—March 28, 1913. No. 41143 A.

Destroyers

Greek Torpedo-Boat Destroyers "Lion," "Panther," "Hawk," and "Eagle." Illustrates and describes one of four vessels recently purchased by the Greek Government from a British firm. 1200 w. Engag.—Nov. 8, 1912. No. 37641 A.

Engng—Nov. 8, 1912. No. 37641 A.
An Armoured and Semi-submersible
Destroyer. Hector C. Bywater and Maurice Prendergast. Description, comparisons, and comments on a projected destroyer for the Russian Navy. Ills. 2800
w. Shipbldr—June, 1913. No. 43057 C.
The Greek Torpedo Boat Destroyers of

The Greek Torpedo Boat Destroyers of the "Lion" Class. Illustrated account of four ships that have withstood seven or eight months of hard work under war conditions. Plate. 1800 w. Engr, Lond July 18, 1913. No. 43971 A.

conditions. Plate. 1800 w. Engr, Lond
—July 18, 1913. No. 43971 A.

The French Destroyer "Commandant
Rivière." Illustrated description of one of
the most successful vessels of her class
with report of official trials. 1800 w.
Engr, Lond—Aug. 15, 1913. No.

Engr, 44730 A.

The Chilian Torpedo-Boat Destroyer "Almirante Lynch." Illustrated description of one of six similar vessels, which will form a flotilla of the largest torpedo-boat destroyer in the world. Plate. 2500 w. Engng—Sept. 12, 1913. Serial, 1st part. No. 45402 A.

U. S. S. Cassin and Cummings. Henderson B. Gregory. Description and trial performance. Ills. 5000 w. Jour Am Soc of Nav Engrs—Aug., 1918. No. 45165 H.

70100 II.

Diesel Engines
Reversing the Order in Diesel Marine
Engines (Sull'inversione di marcia dei
motori Diesel marini). G. Supino. Problems in reversing the firing order in fourcycle engines for astern movements. Ills.
Serial. 1st part. 2800 w. Industria—
Nov. 3, 1912. No. 37530 D.

Dredge Recorder

The "Selandia" and the "Jutlandia" (Le "Selandia" et le "Jutlandia"). M. Gouriet. Description of two Diesel-engined vessels for the service of the Danish East Asia Company. Ills. 3700 w. Genie Civil—Nov. 30, 1912. No 38491 D.

The Starting of Diesel Marine Engines. Illustrates and describes various types of starting gear and their working. 3000 w. Engr, Lond—Jan. 10, 1913. No. 39267 A.

Results of First Voyage of the Oil-Engined Ship "Christian X." Information from a report to the Hamburg-Amerika Line on the completion of her maiden trip to Havana. 1200 w. Engng —Jan. 3, 1913. No. 39158 A.

A New Canadian Oil Engined Ship. Drawing and description of the "Fordonian," propelled by two-stroke cycle Diesel oil-engines. 1200 w. Can Engr.—Jan. 23, 1913. No. 39407.

The Diesel Engine as Motive Power in the Merchant Marine, with Special Reference to the First Successful Motor Ship, "Christian X." Ole K. Olsen. Gives a brief résumé of the development of the internal combustion engine, and detailed description of its application on the vessel named. 5000 w. Jour Assn of Engng Marine Engines (Sullo stato attuale dell'applicazione dei motori Diesel alla marina). G. Supino. Review of ships so equipped, and the possibilty of further application. Ills. 4800 w. Rivista Marittima—Nov., 1912. No. 40621 E + F.

See also Fuels and Motor Ships, under MARINE AND NAVAL ENGINEERING.

Docking

Reducing Cost of Docking Work. G. A. Bisset. An account of the methods employed at the Portsmouth navy yard and some of the results. Ills. 2200 w. Marine Rev—July, 1913. No. 43693 C.

Docks

The New Gladstone Dock at Liverpool. Information showing the demand for increased dock accommodation and reviewing recent developments, with an illustrated description of the construction of the new Gladstone dock. 5000 w. Engng—July 4, 1913. No. 43717 A.

The New Gladstone Dock, Liverpool. Illustrations and interesting particulars of this great dock, recently completed. 2500 w. Engr, Lond—June 27, 1913. No. 43648 A.

Dredge Recorder

A Dredge Director and Recorder. Illustrated description of an apparatus invented by Uldric Thompson and H. S. Taft for the accurate direction of the hy-

Dredges

Electric Power

draulic and bucket types of dredges. 1500 w. Sib Jour of Engng—March, 1913. No. 40923 C.

Dredges

The United States Red River Hydraulic Dredge Waterway. Illustrated description of this steel, self-propelled hydraulic dredge and its propelling and dredging machinery. 1500 w. Int Marine Engng—Nov., 1912. No. 37170 C.

Power Distribution and Buckets on Self-Acting Dredges (Kräfteverteilung und Greifen bei Selbstgreifern). Herr Pfahl. Describes the transmitting system, operating devices, and bucket types in use on various dredges. Ills. Serial. 3800 w. Zeitschr des Ver deutscher Ing—Dec. 14, 1912. No. 39035 D.

Suction, Transporting, and Dumping Dredge Built by the Conrad Works, Harle m (Draguesuceuse-porteuse-refouleuse construite par les Ateliers Conrad, de Haarlem). Jean Guerin. Details of pumping dredge built for the Argentine Republic. Ills. and plate. 3000 w. Genie Civil—Jan. 18, 1913. No. 40069 D.

Innovations in the Construction of Scoop Dredges (Neuerungen im Bau von Löffelbaggern). R. Richter. Describes improvements made in recent German models. Ills. 2500 w. Zeit des Verdeutcher Ing — March 29, 1913. No. 41466 D.

Two 15-Yard Dipper Dredges for Panama. Illustrated description of two of the largest dredges ever built. 1500 w. Int Marine Engng—May, 1913. No. 41897 C.

Modern Practice in the Construction of Scoop Dredges (Der heutige Stand in Bau von Löffelbaggern). Herr Wintermeyer. An outline of methods practiced in recent designs. Ills. 2100 w. Glückauf—April 19, 1913. No. 42117 D. Col. M. B. Adams—A 4-Yard Dipper

Col. M. B. Adams—A 4-Yard Dipper Dredge. Arthur F. King. Illustration, with description of a dredge in operation on the Ohio River. 2500 w. Int Marine Engng—July, 1913. No. 43417 C.

Watkins Rotary-Spud Dredger. Illustrated description, with explanation of the working. 2000 w. Engng—Aug. 15, 1913. No. 44728 A.

An Electric Hydraulic Dredge. Illustrates and describes an electrically operated suction dredge. 1500 w. Eng

reated suction dredge. 1500 w. Eng News—Aug. 28, 1913. No. 44885. Method and Cost of Operating Hydraulic Pipe-Line Dredges in the Upper Mississippi River. Charles W. Durham. Deals with work in connection with the improvement of the Upper Mississippi River. Ills. 3500 w. Engng & Con— Sept. 24, 1913. No. 45456. Bucket Ladder Excavators on the Spanish Canal Alfons XIII, from Seville to the Atlantic. Illustration, with description of the construction and operation. 1200 w. Engng & Con—Sept. 3, 1913. No. 44975.

See also Dredging, under MINING AND METALLURGY, Gold and Silver, and Dredging and Levees, under Civil Engineering, Waterways and Harbors.

Dry Docks

New Dry Dock at Manitowoc. Illustrated description of a dock having a lifting capacity of 6000 tons and that will handle a 500-ft. vessel. 1000 w. Marine Rev—March, 1913. No. 40652 C.

25,000-Ton Floating Dock for the Vulcan Yards, Hamburg (25,000-Tons-Schwimmdock der Vulcan-Werke, Hamburg). Herr Leucke. Plans and details of construction. Ills. 2400 w. Schiffbau—Feb. 12, 1913. No. 40551 D. 12000-Ton Floating Dry Dock at Seat-

12000-Ton Floating Dry Dock at Seattle. Illustrated description of a dock of the "Rennie" type, the pontoons being of timber and the walls of steel. 1200 w. Int Marine Engng—July, 1913. No. 43419 C.

"Dreadnought" Floating Dock for the British Battleships. Frederick C. Coleman. Illustrated description of a dock of the "box" type. 1500 w. Sci Am Sup—Sept. 20, 1913. No. 45234.

The New Graving Dock "Gladstone" at the Port of Liverpool (La nouvelle forme de radoub "Gladstone," du Port de Liverpool). General description with dimensions. Ills. and Plate. 1700 w. Genie Civil—Aug. 16, 1913. No. 45349 D.

Electrical Machinery

Electrical Deck Machinery on the SS. "Fauvette." Illustrates and describes electrically driven auxiliary machinery on a vessel in service between London and Bordeaux. 1000 w. Elec Rev, Lond—Jan. 3, 1913. No. 39137 A.

Electric Power

The Generation, and Electrical Transmission of Power for Marine Transportation. William P. Durtnall. Reviews the development of mechanical power as applied to propulsion, describing the system installed on the "Jupiter." 6000 w. Soc of Engrs—Nov. 4, 1912. No. 37816 N.

An Electrically Propelled Fireproof Passenger Steamer. William T. Donnelly and George A. Orrok. Aims especially to call attention to conditions on excursion and river passenger boats, and the need of bringing them up to the standards of present engineering practice. Ills. 3500 w. Soc of Nav Archts & Ma-

Fuels

Engine Balancing

rine Engrs, No. 8-Nov. 21, 1912. No. 37691 N.

Some Special Applications of Electricity on Warships. A. P. Pyne. Abstract of paper read before the Newcastle Sec. of the Inst. of Elec. Engrs. Discusses problems due to conditions on shipboard. 2500 w. Elect'n, Lond—April 4, 1913. No. 41223 A.

Engine Balancing

The Balancing of a Polycylindrical Engine on Shipboard (Sull' equilibramento di una motrice policilindrica a bordo). Pericle Ferretti. Especially considering the difficulties, due to vibration, etc., in the mounting of a six-cylinder Diesel engine. Diagrams. 4000 w. Rivista Marritima-July-Aug., 1913. No. 45362 E + F.

Engine Log

The Cummings Engine Log System d Revolution Counters. H. R. Gary. and Revolution Counters. Illustrated description of the system installed on the U. S. S. Arkansas. 2500 w. Jour Am Soc of Nav Engrs—Aug., 1913. No. 45168 H.

Engines

Development in Marine Engines. A. Scott Younger. Abstract of paper read before the Sci. Soc. of the Roy. Tech. College, Glasgow. A review of progress since 1880. 5000 w. Mech Engr—Sept.

12, 1913. No. 45294 A.

The Saving of Heat Units in Marine Machinery. Henry C. Dinger. Discusses the possible results of several methods of securing economy which are adaptable to marine work. 7000 w. Jour Am Soc of Nav Engrs—Aug., 1913. No. 45167 H. See Diesel Engines, Gas Engines and Oil Engines, under MECHANICAL ENGI-

NEERING, Combustion Motors.

Engine Tests

See same heading under MECHANICAL Engineering, Steam Engineering.

Experiment Station

The United States Naval Engineering Experiment Station, Annapolis, Md. An account of its origin, establishment, equipment, accomplishment and aims. Ills. 6500 w. Jour Am Soc of Nav Engrs-Aug., 1913. No. 45170 H.

Ferries

Gasoline Car-Ferry for an Electric allway. Illustrated description of a car-transfer boat on the Ohio River, at Evansville, Ind. 1500 w. Nov. 21, 1912. No. 37730. Eng News-

Ferryboat

A Sample of Old-Time Engineering ill. Charles S. Linch. Illustrated de-Skill. scription of the ferryboat "Long Branch," built in 1880 for the East River Ferry

Co., N. Y. 1500 w. Int Marine Engag-

March, 1913. No. 40289 C.
Steel Screw Ferry-Boat Edward T.
Jeffery. J. B. Shipley. Illustrated description of a new ferry-boat for the
Western Pacific R. R. Co. 2200 w. Int
Marine Engng—Oct., 1913. No. 45657 C.
Sco. also Travisco under Maryy.

See also Train Ferries, under MARINE

AND NAVAL ENGINEERING.

Fireboats

Fireboat David Campbell. Profile with description and trial trip of a fire fighting vessel for the port of Portland, Ore. 1000 w. Marine Rev-July, 1913. No. 43695 C

Fire Boats of American Cities. William E. Patterson. Illustrated descriptions of boats in use at San Francisco, Duluth, New York, Boston and Seattle. 4500 w. Munic Jour-Aug. 28, 1913. No. 44797.

Fire Extinction

The Use of Gases on Ships for Fire Extinction and Fumigation. E. Kilburn Scott. Read before the Inst. of Marine Engrs. Discusses the problem of fire extinction on shipboard, illustrating and describing various systems. Also fumigation. Ills. 11000 w. Marine Engr, Lond—Dec., 1912. No. 38140 A.

Fire Extinguishers Fire Extinguishers for Ships' Use. Henry Williams. A discussion of fire extinguishing and forms of apparatus used, and the limitations. Ills. 5000 w. Jour Am Soc of Nav Engrs—Feb., 1913.

No. 40857 H.

Fishing Steamer
A Menhaden Fishing Steamer. George A. Dean, Jr. Illustrated description of the Joseph F. Bellows and its equipment. 1200 w. Int Marine Engng-March, 1913. No. 40290 C.

Fog-Signalling

The Mersey Bar Lightship Alarm. Especially describes the illuminating apparatus and fog-signalling apparatus. Ills. 1200 w. Engr, Lond—July 18, 1913. No. 43977 A.

Freighter

Bulk Freighter Keybell. Illustrated description of a vessel built in Canada. 2000 w. Marine Rev-Nov., 1912. No. 37577 C.

Use of Fuels in the United States Navy. H. I. Cone. Discusses characteristics required, the advantages of oil as compared with coal, and its probable rapid replacement of coal as a naval fuel. 1500 w. Jour Am Soc of Nav Engrs—Nov., 1912. No. 38301 H. Petroleum as a Source of Power for

Ships. Dr. Albert Sommer. Remarks on

Launching Gasoline Engines

the present wasteful use of coal, and the probable developments, giving data concerning naval advantages obtainable by the use of Diesel engines, the supplies of liquid fuel in America; the heating values, etc. 9000 w. Jour Am Soc of Nav Engrs—Nov., 1912. No. 38302 H.

Gasoline Engines

The Development of Gas-Power Motors on Water and Their Application to Fishing Boats (Die Entwicklung der Verbrennungskraftmaschine auf dem Wasser und ihre Verwendung in der Fisch-C. Stein. Types of gas-engines adapted to heavy motor-boats. Ills. Serial. 1st part. 2700 w. Zeit d Mitt Motorwagen Ver—Sept. 30, 1912. No. 37456 D.

See also Ferries, under MARINE AND NAVAL ENGINEERING.

Geared Turbines

Geared Turbines. J. Inglis. Read before the Inst. of Nav. Archts. On the trials of three ferry steamers propelled by geared turbines. 1000 w. Engng—

July 4, 1913. No. 43720 A.

Trials of Three Ferry Steamers Propelled by Geared Turbines. J. Inglis. Read before the Inst. of Nav. Archts. Reports trials of the "Curzon," "Elgin," and "Hardinge," vessels intended to connect Ceylon with the mainland of India by a short sea passage. 1200 w. Mech Engr—June 27, 1913. No. 43637 A.

The Isle of Man Geared-Turbine Steamer "King Orry." Drawings and illustrated description with information concerning the Birkenhead works, when it was designed and built. Plate. 2000 w. Engng—June 27, 1913. No. 43641 A.

German Navy

The Growth of a Great Navy. Percival A. Hislam. Reviews the advance of Germany to the second position. Illustrates the latest battle-cruiser, Goeben, and the latest German dreadnaught, Kaiser. 1800 w. Sci Am—March 15, 1913. No. 40447.

Great Lakes

Coal Shipping on the Great Lakes. J. W. Chamberlin. First of a series of articles discussing all phases of the lake Ills. 2000 w. Coal Age—Aug. 9, 1913. Serial, 1st part. No. 44234.

Big Naval Guns. A discussion of the recently increased resistance of modern armor, and ways of augmenting the striking power of guns on large battleships. 4500 w. Engr, Lond-Sept. 26, 1913. No. 45742 A.

Gyro-Compass

The Sperry Gyro-Compass in Service. R. E. Gillmor. Explains the difficult

problems that had to be solved in perfecting this instrument, giving an illustrated detailed description and results of tests. 5400 w. Soc of Nav Archts & Marine Engrs, No. 14—Nov. 21, 1912. No. 37697 N.

Hydrography
The Application of the Modern Principles of Nautical Astronomy to Hydrography graphy (Sull' applicazione dei moderni principi dell' astronomia nautica all'idrografia). R. Carisio. Methods for determining latitude, time, longitude and azimuth. 4400 w. Rivista Marittima— July-Aug., 1913. No. 45361 E + F.

Ice Detection

The Rise of Temperature Associated with the Melting of Icebergs. H. T. Barnes. Gives results of an experimental study. 1000 w. Can Engr—Dec. 19, 1912. No. 38381.

Taking the Temperature of the Sea. Illustrated account of "detector" inventions and investigations for determining the presence of icebergs. 1700 w. Engr, Lond-Aug. 22, 1913. No. 44927 A.

"Imperator"

The Hamburg Amerika Liner "Imper-Illustrated detailed description. Plates. 5000 w. Engng-June 20, 1913. No. 43386 A.

Power Aboard the "Imperator." Brief illustrated description of the turbine plant, working on the triple-compound system under an initial pressure of 235 lbs. per sq. in. 1000 w. Power-July 8, 1913. No. 43491.

The Fast Turbine Liner "Imperator" (Der Turbinenschnelldampfer "Imperator"). Illustrated description of this new large addition to the Hamburg-America fleet. 1500 w. Schiffbau-June 25, 1913. No. 43516 D.

The Fast Turbine Steamer "Imperator" (Der Turbinenschnelldampfer "Imperator"). Brief description with numerous illustrations. 1100 w. Zeit des Ver deutscher Ing-June 21, 1913. 43531 D.

The Quadruple-screw Atlantic Liner "Imperator." Illustrated description and comparison with the "Olympic" and the nearly completed "Aquitania." 1500 w. Shipbldr-Aug., 1913. No. 45307 C.

Lake Steamers

The Largest Paddle-Wheel Steamers on the American Lakes. Describes the City of Detroit III and the See and Bee. Ills. Engr, Lond-March 7, 1913. No. 40712 A.

Launching

The Launching of the New York. Robert Stocker and Henry Williams. plains the forces acting on a ship during

Launching Devices

Marine Engineering

launching and discusses difficulties and methods of overcoming them, with details in connection with the vessel named. Ills. 6000 w. Pro U S Nav Inst-Dec., No. 38641 E.

Holding Devices for Ships on the Stays (Haltevorrichtungen für Schiffe auf der Helling). C. Rath. Describing hydrau-lic and mechanical releasing triggers. Ills. 4000 w. Schiffbau—Nov. 27, 1912. No. 38437 D.

Launching Ships. A. Hiley. Read before the Inst. of Nav. Archts. Considers a new method of ascertaining the most Discusses the suitable arrangements. launching declivities and their influence upon poppet and way-end pressures. 3500 Engng-June 6, 1913. Serial. 1st part. No. 42888 A.

A New Method of Stopping a Vessel After Launching. A Hiley. A friction brake for restricted ways, equal to 80 tons of chain drags. Ills. 1200 w. Shipbldr—Sept., 1913. No. 45311 C.

Launching Devices
Novel Devices Used in the Launching
of the Battleship "New York." Illustrates and describes the releasing trigger the sand blocks and tumbling shores, and the fore poppet cradle. 1000 w. News—Nov. 14, 1912. No. 37589. Eng

Lifeboats

Ships' Lifeboats, Their Stowage and Manipulation. Axel Welin. Deals with the boatage question from a practical point of view. Ills. 6000 w. Trans Inst of Engrs & Shipbldrs in Scotland—Jan. 21, 1913. No. 40853 N.

The New English Lifeboat Rules (Das neue englische Gesetz über die Rettungsboote). Discussion by Herr Flamm, and reprint of the Board of Trade rules. 8800 w. Schiffbau—Feb. 26, 1913. No. 40552 D.

Life-saving at Sea. Axel Welin. lustrated discussion of types of lifeboats, and appliances for lowering them; also the arrangements for carrying the required number. General discussion. 6000 w. Jour Soc of Arts—May 9, 1913. No. 42260 A.

Power Lifeboats-The Lundin Docked Type. General discussion of the requirements of lifeboats, with plans and description of the type named. 3000 w. Int Marine Engag—June, 1913. No. 42602 C.

Cabin-Boats and Davits for Saving Life at Sea. Illustrates and describes arrangements for stowing boats and appliances for handling them. 2500 w. Engng—July 11, 1913. No. 43901 A.

Boats and Davits. Reviews the final report of the Committee on boats and

1600 w. Engr. Lond-June 27, davits. 1913. No. 43647 A.

The Capacity and Stability of Ships' Lifeboats and Rafts. A part of the recent report of the Boats and Davits Committee, discussing open boats. Ills. 2000 Shipbldr—Aug., 1913. No. 45306 C.

Lifeboats for Ocean Vessels (Rettungs-boote für Seeschiffe). Franz V. Meyer. Outlines present tendencies toward stowage and handling on lately-built steamers, and describes several types of collapsible boats. Ills. 3200 w. Schiff-bau—July 23, 1913. No. 44633 D. See Davits, under MARINE AND NAVAL

ENGINEERING.

Life Saving

Notes on Life-Saving Appliances. W. V. Forbes. Discusses principally lifeboats and methods of handling them. Ills. 4000 w. Soc of Nav Archts & Marine Engrs, No. 5-Nov. 21, 1912. No. 37688 N.

Lighthouses

Lighthouses and Buovs of New York James Pattison. Harbor. Harbor. James Pattison. illustrates and describes lighthouses illuminated by electricity or oil vapor; beacons; combined lighted acetylene and warning buoys; combined lighted Pintsch gas and warning buoys, etc. 2500 w. Int Ma-Illustrates

rine Engng—Jan., 1913. No. 38811 C. Erection of a Reinforced Concrete Light House Tower at the Entrance of the harbor of Alexandria (Errichtung eines "Leuchtfeuerturmes" in Eisenbeton am Eingange der grossen Hafeneinfahrt von Alexandrien). W. Stross. Built in sections on land and towed in final position. Ills. 1800 w. Beton u Eisen-Sept. 13, 1913. No. 46028 E.

Lightship

Motor Lightship "Bürgermeister O'Swald." J. Rendell Wilson. Illustrated description of an interesting vessel stationed in the North Sea at the mouth of the river Elbe. 900 w. Int Marine Engag—April, 1913. No. 40968. Elbe Estuary Motor Lightship. Illus-

trated description of the lightship "Burgermeister O'Swald" and the interesting application of Diesel machinery. 1200 w. Marine Engr & War Craft—Aug., 1913. No. 44309 A.

Marino Boilers

The Arranging of Marine Boiler Mountings. Hints on how to arrange the mountings. 2500 w. Mech Wld—Nov. 1, 1912. No. 37395 A.

Upkeep of Marine Boilers. Charles S. Linch. Suggestions for their care and management. 2000 w. Boiler Maker—Nov., 1912. No. 37850.

Marine Engineering

Some Reminiscences of Early Marine

Marine Engines

Engineering. Sir Alexander B. W. Kennedy. 2500 w. Engng—Feb. 14, 1913. of the v

No. 40129 A.

Marine Steam Engineering. Theodore Lucas. This second of a series of articles discusses the case of the water-tube boiler. 4000 w. Marine Rev—Feb., 1913. No. 39850.

Marine Engines

Quadruple-Expansion Engines for the T. S.S. "Macedonia." Drawings and description of engines on a vessel in service between Greece and New York. 400 w. Engng—Jan. 10, 1918. No. 39262 A.

See also Diesel Engines, and Steam Turbines, under MARINE AND NAVAL EN-

Marine Paints

See Paints, under CIVIL ENGINEERING, Materials of Construction.

Masta

Bending Strain of Mast Fittings (Biegungsbeanspruchung von Mastbeschlägen). J. Stieghorst. Mathematical discussion on the stresses in masts, yards, booms, etc. Ills. 3600 w. Schiffbau—Aug. 13, 1913. No. 44635 D.

Merchantmen

Proportion of Merchantmen of German Origin in the Markets of the World (Verteilung der Handelschiffe deutschen Ursprungs auf dem Weltmarkt). Julius Ott. A series of diagrams showing the number of German trading vessels since 1850 as compared with other countries. 2000 w. Schiffbau—June 25, 1913. No. 43517 D.

Model Tank

Model Experimental Tank. Day Allen Willey. Illustrated description of methods of studying currents and suction and how to improve the lines of ships, as carried out at the Washington tank. 3500 w. Marine Rev—Oct., 1913. No. 45677 C.

Motor Boats

Shallow Draft Motor Boats for Commercial Purposes. Illustrates and describes types. 1800 w. Int Marine Engng—Nov., 1912. No. 37172 C. Prize Contest by the A. D. A. C. for a

Prize Contest by the A. D. A. C. for a 2000-Mark Boat (Das Preisausschreiten des A. D. A. C. für ein 2000 Mark Boat). Some of the designs submitted at the contest. 1400 w. Auto Rund—Jan. 15, 1913. No. 40050 D.

Motor Ships

The Motor Ship "Eavestone." Illustrated detailed description of this single-screw motor ship and its Diesel engine. Plates. 5000 w. Engr, Lond—Oct. 25, 1912. No. 87293 A.

First Long Voyage of Motor Ship

"Eavestone." Report of the performance of the vessel on a trip across the Atlantic, and other information. Ills. 2000 w. Int

Motor Shipe

Marine Engng—Feb., 1913. No. 39657 C.
The Motor Ship Juno. The present number illustrates and describes the engines of the Juno, and matters relating to the design. 5000 w. Plate. Engr, Lond—Nov. 15, 1912. Serial. 1st part.

No. 37829 A.

The Sulzer Machinery on the Diesel-Engined "Monte Penedo" (Die Sulzer-Maschinen des Dieselschiffes "Monte Penedo"). Description of machinery. Ills. 2400 w. Zeit d Oest Ing u Arch Ver-Oct. 4, 1912. No. 37436 D.

The Two-Cycle Sulzer-Diesel Engine for the Freighter "Monte Penedo" (Les Moteurs Sulzer-Diesel a Deux Temps du Cargo "Monte Penedo"). Ch. Dantin. Description and operation of engine. Ills. and Plate. 3200 w. Genie Civil—Oct. 26, 1912. No. 37518 D.

The Motor Ship "Monte Panedo." Gives particulars as to the working of the engines. 1000 w. Engr, Lond—Sept. 12,

1913. No. 45404 A.

Motor Ship Rolandseck. Illustrates and describes the Diesel motors, of the Carels-Tecklenborg type, and features of interest. 3000 w. Engr, Lond—Nov. 22, 1912. No. 38035 A.

Motor Ship Rolandseck. Drawings of the Carels-Tecklenborg engines and of the vessel with description of arrangements. Plate. 700 w. Engr, Lond— Dec. 13, 1912. No. 38533 A. The Motor Ship Rolandseck. Reviews a report made by the chief engineer of

The Motor Ship Rolandseck. Reviews a report made by the chief engineer of the Hausa Line motor ship "Rolandseck," giving particulars of the Diesel engines. 2000 w. Engr, Lond—Aug. 22, 1913. No. 44926 A.

The Diesel-Engined Ship "Rolandseck" (Das Dieselschiff "Rolandseck"). W. Kaemmerer. Description and dimensions of ships, with notes on its behavior when launched. Nov., 1912. Ills. 1700 w. Zeitschr d Ver deutscher Ing — Jan. 4, 1913. No. 40034 D.

Single-Screw Motor Ship of 1500 B. H. P. J. Rendell Wilson. Illustrated description of the motor-ship Rolandseck, equipped with Fecklenborg-Carels Diesel engine. 1500 w. Int Marine Engng—March, 1913. No. 40291 C.

The Emanuel Nobel. Illustrated description of this motor ship—the second ship to be fitted with the new design of Werkspoor motors. 1000 w. Engr. Lond—March 28, 1913. No. 41145 A.

The Diesel Oil Tank Ship Hagen.

The Diesel Oil Tank Ship Hagen. Plans and illustrated description of a recently launched vessel. 700 w. Engr,

Motor Ships

Oil Engines

Lond—March 21, 1913. No. 41021 A.
The Diesel-Engined "Hagen" (Le petrolier à moteurs Diesel "Hagen"). Dimensions of ship and characteristic features of the engines used. Ills. 3000 w. Genie Civil — April 12, 1913. 41529 D.

The Tank Ship "Hagen," Built at the Fried. Krupp Co. Germania Docks (Das Tankschiff "Hagen," erbaut von Fried. Krupp A.-G. Germaniawerft). and general description of vessel and Diesel engines. Ills. 2700 w. Zeit des Ver deutscher Ing—April 5, 1913. No. 41468 D.

The Motor Tank Ship "Hagen," Built at the Fried. Krupp Germania Docks (Das Motor-Tankschiff "Hagen," erbaut von der Fried. Krupp A.-G. Germania-werft). Details of this new Diesel-engined tank ship. Ills. Six plates. Serial. 1st part. 3200 w. Schiffbau-March 12,

1913. No. 41434 D.
German Diesel Engined Tank Ship
Hagen. Illustrated detailed description of this oil-engined vessel. 3500 w. Int Marine Engng—May, 1913. No. 41898 C. Twin-Screw Motor Ship "Hagen." A

New Krupp Two-Stroke Type Diesel Engine Tank Vessel of 2400 B Hp. J. Rendell Wilson. Brief illustrated description of the engines. 1800 w. Eng News—May 1, 1918. No. 41865.

Engines Internal-Combustion Ocean-going Ships. This fifth article on this series describes and illustrates profusely the machine parts of the German tank-ship "Hagen." 2000 w. Shipbldr— May, 1913. No. 42507 A. The Oil-Engined Ship "Fordonian."

Drawings and description of the ship and machinery. A ship of the cargo-boat type, with a single screw, propelled by two-stroke cycle Diesel oil engines. Plate. 3500 w. Engng—Dec. 13, 1912. No. 8500 w. 88521 A.

Motor-Driven Ship Fordonian. Drawings and description of a Diesel-engined vessel for service on the Great Lakes. Marine Rev-July, 1913. No. 43694 C.

Performance on Service of the Motor Ship "Suecia." I. Knudsen. Read before the Inst. of Nav. Archts. Describes vessel of the Sweden-La Plata service, chiefly employed for cargo purposes, and working of the Diesel engines. 1200 w. Mech Engr—June 27, 1913. No. 43638 A.

The Motor Ship Christian X. Report on the performance of this vessel. 1800 Engr, Lond—July 18, 1913. 43974 A.

Motor Ship Isleford. Plans and description of the largest semi-Diesel engine afloat, and results of her trial. 1500 Marine Rev-Aug., 1913. w. 44284 C.

The Electric Motor Ship Tynemount. Illustrated description of this vessel for service on the Great-Lakes and canals, and of its machinery. 2000 w. Engr, Lond—Oct. 10, 1913. No. 45987 A.
See also Tugboats and Propulsion, un-

der Marine and Naval Engineering.

Naval Architecture

The German Naval Architects. view of papers and discussions at the recent meeting in Charlottenburg. 5000 w. Engr, Lond—Nov. 29, 1912. 1st part. No. 38134 A. Serial. 1st part.

Naval Engineering

Presidential Address, Sir Charles Algernon Parsons. Reviews the progress of marine engineering, its present condition, and related topics. 8500 w. Trans N-E Coast Inst of Engrs & Shipbldrs— Nov., 1912. No. 38673 N.

Navigation

A Problem in Coastwise Navigation. (Un problema di navigazione costiera). A. Jachino. The effects of local magnetic disturbances and problems arising there-from. Ills. 6000 w. Rivista Marittima —Sept. 30, 1912. No. 87524 E + F.

The Determination of a Ship's Position at Sea by Wireless. J. Erskine Murray. A simple means of obtaining knowledge in foggy weather. 1500 w.
Trans Inst of Engrs & Shipbldrs in
Scotland—Nov. 19, 1912. No. 39553 N.
Why Not Channel Trolleys? Describes

a plan for doing away with pilots and lessening fog dangers. Ills. 1200 w. Cassier's—June, 1913. No. 42869 B.

Navy Yards
Navy Yards as Manufacturing Establishments, and the Cost of Manufactured Articles. C. A. Harrington. Information and discussion of methods of reducing costs and securing efficiency. 2000 w. Pro U S Nav Inst—Dec., 1912. No. 38**64**0 E.

The Transportation System of a Navy Yard. R. E. Bakenhus. States the general principles affecting a transportation system, suggesting possible improve-ments. 2500 w. Pro U S Nav Inst— Sept., 1913. No. 45422 E.

Oil Engines

Developments in Oil Burning. Peabody. Discusses some of the main characteristics of the mechanical atomizer and modern methods of handling it, reporting experiments and results. 7800 w. Soc of Nav Archts & Marine Engrs, No. 6—Nov. 21, 1912. No. 87689 N.

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Oil Fuel

Propellers

Marine Oil Engines (Motore ad olio pesante tipo marino). Enrico Mariotti. General features of marine oil engines. Ills. 2300 w. Ingeg Ferroviaria—Oct. 15, 1912. No. 37529 E.

The Possibilities of the Marine Oil Engine. Theodore Lucas. A study of the advantages and disadvantages. Ills. 4000 w. Int Marine Engng-Feb., 1913. No. 39654 C.

The "Kromhout" Heavy Oil Engine with Incandescent Combustion Chamber (Moteur à huile lourde "Kromhout" à chambre de combustion incandescente).

O. H. Wildt. Description of 52-h.p., twocylinder marine engine, and 5-h.p., singlecylinder stationary engine. Ill. and plate. 4000 w. Genie Civil—Feb. 1, 1913. No. 40070 D.

An Oscillating Marine Motor. trates and describes a two-cycle oscillating engine invented by C. A. Williamson. 1000 w. Engr, Lond-Feb. 21, 1913. No. 40318 A.

23-Horsepower Djinn Petroleum Marine Motor. Illustrated description of a two-cylinder marine oil-engine of English manufacture. 800 w. Engng—March 7, 1913. No. 40708 A.

20 Horse-Power Marine Oil Engine. Illustrated description of an engine of the "semi-Diesel" type, for a sea-going pleasure cruiser. 1200 w. Engr, Lond—June 20, 1913. No. 43395 A.

See also Diesel Engines and Motor Ships, under MARINE AND NAVAL EN-GINEERING, and same heading and Combustion Motors, under MECHANICAL ENGI-NEERING.

Oil Fuel

Oil Fuel for Marine Engines and Boilers. C. Zulver. Read before the Inst. of Marine Engrs. Gives facts in regard to results obtained from the use of oil fuel on board ship. Ills. 7000 w. Marine Engr & Nav Archt—March, 1913. No. 40459 A.

The History of the Development of Fuel Oil Firing on Ships (Beitrag zur Geschichte der Entwicklung der Feuerung mit flüssigen Brennstoffen auf Schiffen). Dr. Praetorius. Outline of the production of oil and its use on steamships. Serial. 1st part. 6000 w. Schiffbau—March 12, 1913. No. 41436 D.

Oil Fuel in the Royal Navy. Reviews briefly the history of the adoption of oil and discusses use, supply, &c. 2500 w. Engr, Lond—July 25, 1913. No. 44187 A.

The Wallsend-Howden System of Oil Burning in Marine Boilers. Plate and description of the general arrangement for the storage, treatment, and passage of oil to the burners. 700 w. Engng-July 25, 1913. No. 44185 A.

The Reconstruction of the "Olympic." Brief account of the changes introduced. The construction of an inner skin up to a point above the water line, and increase in bulkheads, with other changes. Engr, Lond-March 28. 1913. 600 w. No. 41146 A.

Pacific

Policing the Pacific. Henry Harrison Suplee. Calls attention to the responsibility of the United States for peace on the Pacific and lands bordering it, and discussing how war may be avoided. Ills. 3500 w. Cassier's—July, 1913. No. 3500 w. 43347.

Periscope

The Goerz Panoramic Periscope for Submarines (Le Périscope panoramique Goerz, pour sous-marins). Describes the arrangement and general details of this instrument. Ills. 2400 w. C —Aug. 9, 1913. No. 45347 D. Gente Civil

Plate

The Solidity of Taut Rectangular Plate and Its Riveted Margin (Zur Festigkeitsberechnung der eingespannten Rechteckplatte und deren Randträger). E. Kam-Mathematical calculations on the strains induced, especially in the skins of ships. Diagrams. Serial, 1st part. 3200 w. Schiffbau—Jan. 8, 1918. No. 40019 D.

Port Machiner Port Facilities for Ships and Cargoes in the United States. William T. Donnelly. Abstract of paper and discussion. Discusses facilities for loading and unloading cargoes, the different conditions of European and American ports, and especially the difficulties at New York. 4500 w. Jour Am Soc of Mech Engrs— June, 1913. No. 42958 D.

Propeller Design

Operation and Calculation of Ship Propellers (Die Wirkungsweise und Be-rechnung von Schiffsschrauben). Dr. Rothe. Studies of stream flow from the blades and stream action on them. Ills. Serial, 1st part. 3500 w. Die Turbine-Jan. 20, 1913. No. 40053 D.

Propellers

Screw Propellers. Alfred J. C. Robert-The deduction of simple mathematical formulae for designing highly effi-cient propellers for any requirements. Diagram. 1400 w. Shipbldr—Sept., 1913. No. 45309 C

Design of Propellers for Geared Turbines. Peter Doig. Gives chart and explanation of its use in designing geared turbine propellers. 1800 w. Int Marine Engng—Oct., 1913. No. 45659 C. Propeller Experiments. Ole G. Halvor-

Propeller Shafts

Resistance

A report of experiments and description of propeller designs and results obtained. Ills. 2000 w. Engr, Lond—Sept. 26, 1913. No. 45743 A.

Screw Propellers. C. W. Dyson. Discusses methods of design, design by comparison; effect of thrust deduction and reduction of diameter on the propulsive coefficient. 17000 w. Jour Am Soc of Nav Engrs—May, 1913. No. 42918 H. Empirical Method of Screw Propeller

Design. Peter Doig. Considers methods in vogue. 2000 w. Int Marine Engag— June, 1913. 42601 C. Serial. 1st part.

See same heading, under MECHANICAL Engineering, Aeronautics, and Molding. under Mechanical Engineering. Machine Works and Foundries.

Propeller Shafts

Investigations on the Influence of Axial Loading on the Modulus of Torsion (Untersuchung über den Einfluss einer Axial-belastung auf den Gleitmodul bei Dreh-ung). Paul Nettmann. Experiments on torsion of shafts, especially propeller shafts. Ills. Serial. 1st part. 6000 w. Die Turbine—Oct. 5, 1912. No. 37459 D. Propulsion

On the Standardization of Warship Propelling Machinery. Leonardo Fea. Trans. from the Italian. Reviews the types of boilers used by different countries on their warships. standardization. 2500 w. Also engine Engng-Jan. 10, 1918. No. 39264 A.

Mechanical Gearing for the Propulsion of Ships. Sir Charles A. Parsons. Read before the Inst. of Nav. Archts. An account of the progress made up to the present time. Ills. 2500 w. Engng—March 14, 1913. No. 40827 A.

Propelling Machinery of U. S. Battleships. Ernest H. B. Anderson. A reply to criticisms against the adoption of turbine-propelling machinery in battleships and arguments favoring the retention of

and arguments favoring the retention of the Parsons reaction type of rotative engine. 3300 w. Jour Am Soc of Nav Engrs—Feb., 1913. No. 40860 H.
Modern Ship Propulsion. Carl C.
Thomas. An outline of the present situation regarding the use of steam engines, turbines and internal combustion engines on shipboard. Ills. 2500 w. Wis Engr-May, 1913. No. 42443 C.

Ship Resistance and Ship Propellers (Scheepsweerstand Scheepsschroeen ven). C. H. Holst. Studies on the the-oretical and practical resistance factors, together with propeller design. Ills. 5100 w. De Ingenieur—April 12, 1918. No. 42162 D.

Electric Propulsion. John Reid and H.

A. Mayor. Describes the "Tynemount," and shows how electricity solves certain difficulties in the power question. Ills. 5000 w. Marine Engr—July, 1913. No.

The Electrical Propulsion of Ships. W. L. R. Emmet. Shows how recent developments of the turbine has made possible electric propulsion, and explains the method proposed. Ills. 3000 w. Jour Fr Inst—July, 1913. No. 44029 D.

Transmission Apparatus for the Propulsion of Ships and Other Purposes (Les appareils de transmission pour la propulsion des navires et pour diverses appli-cations à bord). C. N. A review of purely mechanical, electrical, and hydrau-lic power transmission on shipboard. 4500 w. Tech Mod—July 15, 1913. No. 43583 D.

A New Towage Test for the Investiga-tion of Model Propellers in Conjunction with the Ship's Model (Eine neue Schlepp-versuchs-methode zur Untersuchung von Modell-propellern in Verbindung mit dem Schiffsmodell). Franz Matthias. improvement upon the Froude method, by which both propeller and vessel may be tested simultaneously. Ills. 2000 w. Schiffbau-July 9, 1913. No. 44631 D.

Reinforced Concrete

A Boat of Reinforced Concrete (Boot aus Eisenbeton). Hermann Roch. illustrated description of a small sailboat, entirely built of this material, watertight and seaworthy. 400 w. Beton u Eisen-Jan. 3, 1913. No. 40030 E.

Resistance

The Progress of a Ship in Confined Waters (Fahrt der Schiffe auf beschränktem Wasser. H. Krey. Experiments to determine the resistance caused by back action in narrow channels. Ills.

Serial. 1st part. 4400 w. Schiffbau—March 26, 1913. No. 41438 D.
The Energy Systems Accompanying the Motion of Bodies Through Air and Water. J. B. Henderson. Read before the Inst. of Nav. Archts. Calls attention to important features prominent in the mathematical treatment but neglected in experimental research. 4000 w. Engng-April 18, 1913. No. 41772 A.

Effect of Form and Size on the Resistance of Ships. G. S. Baker and J. L. Kent. Read before the Inst. of Naval Archts. Deals with the variation of resistance of ships with speed and with fullness of form. 4500 w. Engng-July 25, 1913. No. 44186 A.

Review of 1912

Marine Engineering in 1912. A general review of the work of the year. Ills.

Rudders

Ship Coaling

2500 w. Engr. Lond-Jan. 3, 1913. No. 39163 A.

Shipbulding and Marine Engineering in 1912. Review of production and statistics for the United Kingdom. 8500 w. Engng-Jan. 3, 1913. No. 39160 A.

Rudder Trials, U. S. S. Sterett. R. T. Hanson and J. C. Hunsaker. Describes trials and gives results. Ills. 8000 w. Soc of Nav Archts & Marine Engrs, No. 11—Nov. 21, 1912. No. 37694 N.
The Pendulum Propeller Rudder. H.

C. Vogt. Illustrated description of an oscillating substitute for the screw. 4500 w. Sci Am Sup—May 24, 1913. No. 42317.

Safety

Safety of Life at Sea. James Donald. uives a general outline of what has been done by Great Britain and the United States to secure safety of life at sea, more particularly by life-saving appliances and by watertight subdivision of vessels. Discussion. 9500 w. Jour Fr Inst—Jan., 1913. No. 39355 D.

On Safety of Life at Sea. Percy A. Hillhouse. Read before the Inst. of Nav. Archts, at Glasgow. Discusses causes of accidents, and what has been done to increase the safety. 3000 w. Engng-June

27, 1913. No. 43645 A.

Salvage
The Salvage and Repair of the Steamship "Royal George." R. G. Skerrett. salvage work of a vessel on the St. Law-rence River. 1000 w. Sci Am—July 26, 1913. No. 43862.

Salving the "Lutine." Percival A. Hislam. An account of the recent work of the National Salvage Assn. of London to secure the treasure sunk with this British frigate in Oct., 1799. Ills. 1500 w. Sci Am—May 17, 1913. No. 42097.

Raising the United States Brig "Niag-a." W. L. Morrison and A. G. Kessara.' ler. An outline of the battle of Lake Erie, with detailed description of the raising of the "Niagara." 2000 w. Sci Am— June 28, 1913. No. 43199.

The Salvage of the United States Army Transport "Liscum." Illustrated description of methods used in raising this vessel which sank Aug. 25, 1912, in front of the Old Dock, Shanghai. 500 w. Engr, Lond-Sept. 5, 1913. No. 45157 A. See Submarines and Tugs, under MA-

RINE AND NAVAL ENGINEERING.

Ship Boilers

See Boilers, under MECHANICAL EN-GINEERING, Steam Engineering.

Shipbuilding

The Ultimate Dimensions of the Largest Seagoing Vessels. C. E. Grunsky. Reviews papers bearing on the size of vessels, and dimensions of maritime canals, presented at the International Navigation Congress. 6000 w. Jour Assn of Engng Socs—Nov., 1912. No. 37584 C.

Nine Months Clyde Shipbuilding— Past Work and Prospects. A review of the past quarter. 1200 w. Engr, Lond.

Oct. 25, 1912. No. 37294 A.

Progress in British Ship Yards (Fortschritte in den britischen Schiffbaubetriebe) Otto Lienau. Present practice in British shipbuilding, improved designs,

strish samplanding, improved design, etc. Ills. Serial. 1st part. 4000 w. Schiffbau—Oct. 9, 1912. No. 37422 D. Notes on Inspection Duty at Shipbuilding Works. A. B. Willits. Helpful suggestions for the inexperienced. 9000 w. Pro U S Nav Inst—Dec., 1912. No.

38639 E.

The Fourteenth General Assembly of Shipbuilders, Nov. 22-23, 1912 (Die XIV Hauptversammlung der Schiffbautechnischen Gesellschaft am 22. und 23. November, 1912). Herr Flamm. abstracts of the papers read and their discussions. 7200 w. Serial. 1st part. Schiffbau—Dec. 11, 1912. No. 89009 D. Technical Growth of the Austrian Mer-

chant Marine (Die technische Entwick-lung der österreichischen Handelsmarine). Ernst Grafen Aichelburg. A review of progress in shipbuilding in Austria. Ills. 3000 w. Zeit & Oest Ing u Arch Ver—April 18, 1913. No. 42148 D.

The World's Naval and Merchant Shipbuilding. Information from Lloyd's Register, reporting the shipbuilding during the past year. 3500 w. Engng—Jan. 24, 1913. No. 39797 A.

Shipbuilding Berth Gantries at the Nagasaki Yard. Reviews briefly the progress of shipbuilding in Japan, illustrating and describing the arrangements for handling materials. 1200 w. Engng—Feb. 14, 1913. No. 40131 A.

Shipbuilding Symbols

Concerning International Symbols in Shipbuilding (Ueber eine internationale Sprache im Schiffbau). Dr. Gümbel. Suggested expressions for international usage, for dimensions and formulae. Diagrams. Serial. 1st part. 3200 w. Schiffbau — March 12, 1913. No. 41435 D.

Ship Coaling

Coaling Ships at Sea (See-Bekohleinrichtungen für Schiffe). Herr Wintermeyer. Illustrates and describes bucket. crane, transporter, and cableway meth-

Stability

ods while ships are anchored or in mo-tion. 4800 w. Zeitschr des Ver deutscher Ing-Oct. 5, 1912. No. 37445 D.

Ship Construction

The Watertight Subdivision of Ships. J. Bruhn. Considers the usual causes of injuries to ships which may cause them to founder, discussing the value of the double skin, and of watertight bulkheads and related subjects. 7000 w. Trans Inst of Engrs & Shipbldrs in Scotland— Dec. 17, 1912. No. 40401 N.

Ship Construction Treated from a Structural Engineering Standpoint. James E. Steele. Discusses the prob-lem of getting a bridge-like structure which will carry the uniform load due to cargo. 3000 w. Int Marine Engag-Sept., 1913. No. 44836 C.

Ship Design

Notes on Fuel Economy as Influenced by Ship Design. E. H. Rigg. Points out possible economies due to efficient ship design. 1800 w. Soc of Nav Archts & Marine Engrs, No. 9—Nov. 21, 1912. No. 87692 N.

The Influence of Form on the Economical Running of a Ship. Ernest Saxton White. The discussion is confined to the ordinary type of shelter deck cargo steamer. Gives curves and running costs of several forms of vessel. General discussion. Plates. 6000 w. Trans N-E

Coast Inst of Engrs & Shipbldrs—Dec., 1912. No. 38674 N. The Unsinkability of Modern Sea-Going Ships. Prof. Flamm. Investigations of the stability of ships and suggestions of studies necessary in revising rules relating to arrangements for safety, especially those in which the hull is subdivided by bulkheads. Diagrams. 2500 w. Engng-Feb. 14, 1913. No. 40128 A.

Some Notes on the Arch Principle of Ship Construction. Maxwell Ballard. Describes the structural arrangements and discusses the technical side of the arch design and commercial considerations, and gives tabulated comparisons. Plates. 6000 w. Trans. N-E Coast Inst of Engrs & Shipbldrs - Jan., 1913.

39999 N.

Influence of Chief Dimensions and Bottom Lines on the Actual Speed of Ships (Influence des dimensions principales et des formes des carènes sur les vitesses réalisées par les navires). L. Le Besnerais. A study of the resistances. Ills. Serial, 1st part. 5400 w. Tech Mod— Feb. 15, 1913. No. 40068 D. The "Titanic" Disaster, and Water-

tight Compartments of Large Mail Ships (Het ongeval van de "Titanic" en de waterdichte indeeling van groote mailbooten). E. Vossnack. Detailed studies on the design of large ships. Ills. and plates. 15600 w. De Ingenieur—March 29, 1913. No. 41505 D.

See also Corrugated Ship, under MA-

RINE AND NAVAL ENGINEERING.

Ship Forms

Methodical Experiments with Mercantile Ship Forms. G. S. Baker. Read before the Inst of Nav. Archts. Gives results of research work carried out at the William Froude Tank. Ills. 4000 w. Engng—April 11, 1913. No. 41394 A. Methodical Experiments with Mercan-4000 w.

tile Ship Forms. G. S. Baker. Read be-fore the Inst. of Naval Archts. Results of research work at the William Froude tank, with description of the methods used to secure accuracy. 3500 w. Engr, Lond—May 23, 1913. No. 42759 A.

Ship Model

The Tetrahedron Ship Model. An examination of tetrahedron forms, their speed, stability, strength, etc. 1600 w. Engr, Lond—July 18, 1913. No. 43976 A.

Ship Speed

Logarithmic Speed-Power Diagrams. Thomas M. Gunn. Explains a means of convenient application of the laws of comparison for ships and propellers. Diagrams. 2500 w. Soc of Nav Archts & Marine Engrs, No. 12—Nov. 21, 1912. No. 37695 N.

Ship Stability

A Stability Indicator (Ein Stabilitäts-indikator). Dr. Kempf. A new device, graphically indicating the roll of the ship. Ills. 1600 w. Schiffbau—Jan. 8, 1913. No. 40020 D. Ship Ventilating

See Fans, under MECHANICAL ENGI-NEERING, Heating and Cooling.

Soundings

Swedish Signal-Sounding Apparatus for Locating Shoals and Submarine Mines (Sonde a signal et appareil Swedois pour decouvrir les bas-fonds et les mines sous-marines). Emile Smith. An underwater towing device which interrupts connection upon hitting obstructions. Ills. 1500 w. Genie Civil—May 17, 1913. No. 43082 D.

Stability

Active Type of Stabilizing Gyro. Elmer A. Sperry. Considers the advantages to be derived by efficiently stabilizing ships, and the methods employed. Ills. 6000 w. Soc of Nav Archts & Marine Engrs, No. 10—Nov. 21, 1912. No. 37693 N.

A Gyroscopic Mechanism for Recording Roll and Pitch of Vessels at Sea. Brief illustrated description of an ingenious device invented by Elmer A.

Stabilizer Steamships

Sperry. 1000 w. Sci Am—Aug. 23, 1913. No. 44500.

Stability of Ships—Notes for Commanders. George Nicol. Discusses the importance of training those responsible for the loading of ships in knowledge of the stability of floating vessels. Ills. 2500 w. Int Marine Engng—Jan., 1913. No. 38813 C.

The Calculations of Stability of Ships in Non-Intact Conditions. W. S. Abell. Read before the Inst. of Nav. Archts. Suggests improvements in calculations of stability of damaged vessels. 2800 w. Engng—March 21, 1913. No. 41019 A.

Notes on Initial Stability. A. Cannon. A study on applied mathematics. 2200 w. Trans Inst. of Engrs & Shipbldrs in Scotland—March 18, 1913. No. 42330 N.

Some Further Notes on Approximate Stability. Arthur R. Liddell. Discusses problems of a ship's stability. 1000 w. Engng, Lond—April 25, 1913. No. 41932 A.

Effect of Internal Loose Water on the Rolling of Ships. A. Cannon. Read before the Inst. of Naval Archts. Explains the events that led to the experimental work described. Ills. 6000 w. Engng—July 18, 1913. No. 43970 A.

The Effect of Water-Chambers on the Rolling of Ships. Lloyd Woollard. Read before the Inst. of Naval Archts. An investigation of the efficiency of water-tanks as a means of reducing rolling at sea. 2500 w. Engng—July 11, 1913. No. 43903 A.

Notes on the Stability of Leaky Ships (Beitrag zur Stabilität des lecken Schiffes). Erich Koch. Supplementary contribution to the previous calculations of Dr. Flamm. 2600 w. Schiffbau—June 25, 1913. No. 43518 D.

See also Gyroscopes, under MECHANI-CAL ENGINEERING, Machine Elements and Design.

Stabilizer

Frahm Anti-Rolling Tanks. Review of paper by Major Pecoraro in Rivista Maritina. Gives diagrams illustrating the effect of anti-rolling tanks and discussion of this invention. 1500 w. Engr, Lond—March 14, 1913. No. 40832 A.

The Elimination of Rolling (Le casse di rollio). Nino Pecoraro. A review of the stabilizer experiments of Schlick, Sperry, Cremieu and Frahm. Ills. 1400 w. Rivista Marittina—Feb., 1913. No. 40622 E+F.

Steam Engineering

Marine Steam Engineering. Theodore Lucas. Discusses recent developments of steam engineering practice and its future outlook. 3500 w. Marine Rev-Nov., 1912. No. 37579 C. Steamships

The First of the Eight New American-Hawaiian Steamers. Plans and description. 1500 w. Int Marine Engag— Nov., 1912. No. 37174 C.

Shallow Draft, Tunnel Stern Steamer Thousand Islander. Illustrated detailed description of this vessel designed especially for service on the St. Lawrence River. 5000 w. Int Marine Engag—

Nov., 1912. No. 37173 C.

The New Buffalo Steamer "See and Bee." Illustrated description of the largest side-wheeler in the world to be used on the Great Lakes. 5000 w. Marine Rev—Nov., 1912. No. 37578 C.

Side-Wheel Passenger Steamer. See and Bee. Illustrated description of a vessel for service between Cleveland and Buffalo. 4000 w. Int Marine Engng—June, 1913. No. 42603 C.

The French Trans-Atlantic Liner "Rochambeau." Illustrated description of

The French Trans-Atlantic Liner "Rochambeau." Illustrated description of this new steamship for service between Havre and New York. Plate. 800 w. Engng—Nov. 22, 1912. Serial. 1st part. No. 38032 A.

Twin-Screw Steamer "Indarra." Illustrated description of a vessel built for the Australian United Steam Navigation Co. 1200 w. Marine Engr, Lond—Dec., 1912. No. 38141 A.

Lengthening the Aberdeen Liners Marathon and Miltiades. Gives particulars of the vessels and describes the work of severing and lengthening. Ills. 1400 w. Engr, Lond—Jan. 17, 1913. No. 39487 A.

The Shallow Draught Steamer Comte de Flandre. Illustrated description of a steamer intended for service on the Congo to carry oil. 600 w. Engr, Lond —Dec. 27, 1912. No. 38905 A.

One of the seven freight steamships built for service in the Atlantic and Pacific coast trade. 1200 w. Int Marine Engng

coast trade. 1200 w. Int Marine Engng
—Feb., 1913. No. 39653 C.

Typical Ships. This first of a series of articles considers the up-to-date cargo ship in modern service. Ills. 2500 w. Engr, Lond—Jan. 24, 1913. Serial, 1st part. No. 39808 A.

The Spanish Quadruple-Screw Liner Reina Victoria-Eugenia. Illustrated detailed description of one of the two steamers built for passenger and mail service between Spain and the South American countries. Plate. 2500 w. Engng — March, 1913. Serial. 1st part. No. 40709 A.

Launch of the Latest Giant Steamship.

Steamships

Steamships

Illustrates and describes details of the "Vaterland," 950 feet in length. 1000 w. Sci Am Sup—April 12, 1913. No. 41181.

Quadruple-Screw Turbine Allan Liner "Alsatian." Illustrates and describes this recently launched vessel and its equipment, giving much information of interest. Plate. 6500 w. Engng—April 4, 1913. No. 41240 A.

The Clyde Line Coastwise Steamship "Lenape." Illustrated detailed description of a coast vessel and its equipment. Plate. 3000 w. Int Marine Engag—April, 1913. No. 40967 C.

Geared Turbines in Cargo Steamer "Cairnross." C. Waldie Cairns. Read at N.-E. Coast Inst. of Engrs. & Shipbuilders. Gives results of a comparative trial between the triple-expansion engine and geared turbines in cargo steamers. Editorial. Ills. 8000 w. Engng—April 4, 1913. No. 41241 A.

Geared Turbine Steamers for the South Indian Railway. Illustrates and describes the general arrangement and details of the propelling machinery in the geared turbine steamers, Curzon, Hard-

inge and Elgin. Plate. 400 w. Engr, Lond—May 2, 1913. No. 42011 A. Quadruple Screw Turbine-Driven Al-lan Liner "Calgarian." Illustration and brief description of a recently launched ship, for service between Liverpool and

the St. Lawrence. 1200 w. Mech Engr —May 2, 1913. No. 42001 A. Spanish Transatlantic Liner "Infanta Isabel de Borbon." Illustrated description of the ship and its machinery, with information of interest. 3500 w. Engng May 2, 1913. Serial. 1st part. 42006 A.

The French South Atlantic Liner "Lutetia." Illustrated description of the largest steamship running between French ports and South America. 800 w. Engr, Lond—May 9, 1913. No.

42295 A.
The "Aquitania." Illustrations with brief description of the latest addition to the Anglo-American fleet. 700 w. Am Sup-April 26, 1913. No. 41615.

The Cunard Liner "Aquitania." Information concerning this huge vessel, to be launched in April. 1000 w. Engr, Lond—Jan. 31, 1913. No. 39817 A.

The Launch of the "Aquitania."

Drawings and illustrated description of the very successful launch of this large vessel. Plate. 1200 w. Engng—April

25, 1913. No. 41980 A.
The new Cunard Liner "Aquitania."
Illustrated detailed description of the largest ship yet built for express service to New York. Plates. 12500 w. Engng -April 18, 1913. No. 41766 A.

The Cunard Liner "Aquitania." Brief description of leading particulars and illustrations of its construction. 1000 illustrations of its construction. w. Shipbldr—May, 1913. No. 42508 A.

The Geared-Turbine Ferry Steamers "Curzon," "Hardinge" and "Elgin." Leading particulars of three vessels built for the Indo-Ceylon ferry service. Ills. 1500 w. Shipbldr — June, 1913. No. 1500 w. 43058 C.

The Passenger and Cargo Steamer "Digby." Dimensions and construction particulars of this vessel recently constructed for service between Halifax and Liverpool. Plates. 1500 w. Shipbldr-June, 1913. No. 43059 C.

New Pacific Coastwise Steamship Congress. Illustrated description of a vessel for service between Seattle, Wash., and San Diego, Cal. The largest vessel so far built for the sea coasting trade of the United States. 3000 w. Int Marine Engng-July, 1913. No. 43418 C.

Hudson River Steamer Washington Irving. Brief illustrated description of this large side-wheel steamer. 2000 w. Int Marine Engag—July, 1913. 43416 C.

The Cunard Canadian Liner "Andania." Illustration and short description of one of a pair of sister ships. 700 w. Engng—Aug. 15, 1918. No. 44726 A.
New Navigation Material on the

Rhone (Neues Schiffahrtsmaterial für die Rhone). Rud. Schätti. A brief review of conditions on the Rhone river, and de-tails of the new river boat "France." Ills. 2800 w. Schweiz Bau-Aug. 16, 1913. No. 44643 D.

Old Dominion Line's Freight Steamer "Tyler." Illustrated description of a new vessel to be used exclusively for freight. 800 w. Int Marine Engag—Sept., 1913. No. 44834 C.

The Quadruple-screw Steamers "Empress of Russia" and "Empress of Asia." Dimensions, plans and description of these two steamers for service between Canada and western Pacific ports. Ills. 1200 w. 45308 C. Shipbldr—Sept., 1913.

New Pacific Liner Built at Newport News. Describes the new steel single-screw steamship Matsonia, for service between San Francisco and Honolulu. Ills. 2500 w. Int. Marine Engng-Oct., 1913. No. 45658 C.

Steamship Matsonia. Illustrated description of a steel, single-screw steamship for service between San Francisco and Honolulu, Hawaii. 3000 w. Marine Rev-Oct., 1913. No. 45678 C.

Trial Runs of the Pacific Liner Con-Illustrated description of this

Steam Turbines

Tank Steamers

twin screw passenger and freight steamer, with report of trials. 1200 w. Int Marine Engng-Oct., 1913. No. 45656 C.

Steam Turbines

Geared Turbines. George Westinghouse. From the Engng. Sup. of London Times. Discusses their development for ship propulsion. 2200 w. Sci Am Sup —Dec. 21, 1912. No. 88319.

Marine Turbine Operation and Econ-H. C. Dinger. Gives a set of instructions which have been successfully used. 2500 w. Int Marine Engng—Feb., 1918. Serial. 1st part. No. 39656 C.

The Marine Turbine of Franco Tosi in Legnano (Die Schiffsturbine von Franco Tosi in Legnano). Details of some of the important features of the Tosi ma-rine turbine. Ills. 1600 w. Zeit f d Ges Turbinenwesen—Dec. 30, 1912. No. 39047 D.

The Curtis Turbines of the Scouts "Marsala" and "Nino Bixio." Vittorio Malfatti. Abstract translation from the A general description of the Curtis turbine and its application to these ships of the Italian Navy. 2000 w. Engng Jan. 31, 1913. No. 39806 A.

Submarine Mines

The Elia System of Construction and Placing Submarine Mines (La struction et la pose des mines sous-ma-rines système Elia). General descrip-Plate. tion of this system. Plate. 4000 w. Genie Civil—Jan. 4, 1913. No. 39090 D.

Development of the Submarine Mine in the United States Service. Richmond P. Davis. Reviews the history of the development in the United States service. and briefly considers automobile torpedoes

un briefly considers automobile to pecucia in harbor defense. Ills. 4500 w. Jour U S Art—Jan.-Feb., 1913. No. 39949 D. The Ships "Pluton" and "Cerbère" for Anchoring Submarine Mines (Les nav-ires mouilleurs de mines sous-marines "Pluton" et "Cerbére"). M. Gouriet. General description of the construction of ships for this purpose. Ills. 2200 w. Civil—April 26, Genie 1913. No. 42193 D.

Submarines

Salvage and Testing Facilities for Sub-R. G. Skerrett. Illustrates and describes boats and docks in France, Germany, Italy, and under construction in England. 1800 w. Sci Am—Nov. 23, 1912. No. 37732.

Military Value and Tactics of Modern Submarines. Discusses the factors of communication, mobility, invulnerability and offensive strength; the relative administrations of the control of vantages and disadvantages of submarines and submersibles, etc. Ills.

Pro U S Nav Inst-Dec., 1912. No. 38638 E.

Russia's Submarine Cruiser. Skerrett. Illustrated description of a submersible of 5400 tons displacement. 900

w. Sci Am—April 26, 1913. No. 44593.
Rudiments of the Dynamics of Submarine Propulsion (Grundlagen zu einer Dynamik der Unterwasserfahrt). Marcell Klein. Mathematical discussion of underlying principles. Diagrams. Serial. 1st part. 4800 w. Schiffbau—March 12, 1918. No. 41437 D. The Visibility of Submarines. W. L.

Cathcart. Shows how the effectiveness of submarines is crippled by the development of aviation. Aviators can easily see submarines invisible at the surface. 1500 w. Sci Am-Aug. 16, 1913. No. 44353.

Submarine Ship Construction (Unterseebootsbau). Herr Aarestrup. A review of the several European firms engaged in submarine construction and their output. 2600 w. Schiffbau—July 23, 1913. No. 44634 D.

Suction

Experiments on Suction or Interaction Between Passing Vessels. A. H. Gibson and J. Hannay Thompson. Read before the Inst. of Nav. Archts. Describes experiments carried out to obtain information as to the magnitude and range of action of the forces involved. Ills. 4500 w. Engr. Lond—July 4, 1913. No. 43725 A. Tank Ships

Petroleum Transport by Sea, and the Latest Designs of Tank Ships (Der Petroleumtransport zur See, und die Neueste Entwicklung der Tankschiffe). A review of progressive development. Serial. 1st part. 2400 w. Schiffbau—Dec. 11, 1912. No. 39010 D. Single-Screw Molasses Tank Steamer

"Amolco." Plans and description of a vessel now under construction at Quincy, Mass. 1500 w. Int Marine Engng— Sept., 1913. No. 44835 C. See also Motor Ships, under MARINE

AND NAVAL ENGINEERING.

Tank Steamers

The Design and Construction of Oil eamers. James Montgomerie. Brief Steamers. review of the features of structural and other interest to be found in tank ves-sels. Ills. 7500 w. Trans Inst of Engrs & Shipbldrs in Scotland—Jan. 21, 1913. No. 40854 N.

The Design and Construction of Oil-Steamers. James Montgomerie. Read before the Inst. of Engrs. and Shipbldrs. in Scotland. A brief review of the features of structural and other interest to be found in tank vessels engaged in over-

Terminals

United States Navy

sea trade. Ills. 2500 w. Engng—Feb. 28, 1913. No. 40489 A.

Terminals

New Steamship Terminal at Philadelphia. H. McL. Harding. Plan and description of the Hughes Terminal, on the Delaware River. 2000 w. Int Marine Engng—March, 1913. No. 40292 C.

U. S. S. Fanning. Henderson B. Gregory. Report of the contract trials performance of this torpedo-boat destroyer. 1000 w. Jour Am Soc of Nav Engrs—Nov., 1912. No. 38295 H.
U. S. S. Jarvis. Henderson B. Gregory. Perset of the contract trial per

ory. Report of the contract trial per-formance of this torpedo-boat destroyer. 1000 w. Jour Am Soc of Nav Engrs— Nov., 1912. No. 38296 H.

Tow-Boats

Experiments on the Fulton and the Froude. C. H. Peabody. An account of experiments made to investigate the characteristics of tow-boats and the determination of favorable conditions. Ills. 4000 w. Soc of Nav Archts & Marine Engrs, No. 1—Nov. 21, 1912. No. 87684 N. Train Ferries

Railway Transport Ships at Hamburg Hamburgischen Eisenbahnfährschiffe). W. Thele. Detailed description of the two double-deck self-propelled ferries in service at Hamburg. Ills. and Plates. Serial 1st part. 4800 w. Schiffbau-Oct. 8, 1913. No. 46051 D.

Transformers

Tests on a 10000 Horse-power Föttinger Transformer. Alfred Gradenwitz. Illustrated account of tests made of this hydraulic gear for marine turbines. 1000 Sci_Am-June 14, 1918. No. 42820.

The Latest Performance of the Föttinger Transformer (Der neueste Ausführung des Föttinger-Transformators). Wilhelm Spannhake. Details of a four-teen day test of this type of hydraulic gear for marine turbines in ship propul-sion. Ills. Serial. 1st part. 5500 w. Zeit des Ver deutscher Ing-May 10, 1913. No. 43010 D.

Transmitter

The Föttinger Transmitter. Describes an installation of this power into a ship for service in the South Atlantic and the Panama Canal. Ilis. & Plate. 5500 w. Engng—Aug. 15, 1913. No. 44722 A.

Tugboats

The Italian Tugboat "Savoia," with Diesel Engines. Brief illustrated description. 400 w. Engng—Dec. 6, 1912. No. 38247 A.

Results of Tests Made Preliminary to the Construction of Tug Boats and Barges Designed for Service in the Port of Bordeaux (Note sur les resultats d'essais faits au sujet de la construction des remorqueurs et chalands destinés chautiers du port de Bordeaux). M. Lefort. Description of the tests conducted. Diagrams. 6000 w. Ann d Ponts et Chausseés—May-June, 1913. No. 43560 E + F.

Tugs

Salvage and Fire Tug "San Gerra-no." Illustrated detailed description of a recently completed vessel for service at Naples, Italy. 600 w. Engng—Nov. 15, 1912. No. 37824 A.

Side-Wheel Tug Boats "Hugo Marcus" and "Habsburg" (Seitenradschleppdampfer "Hugo Marcus" und "Habsburg."). Otto Heesch. Details of mechanical arrangements with special attention to mov-able paddle blades. Ills. and Plates. 2400 w. Schiffbau—Oct. 9, 1912. No. 37423 D.

Turbine Gear

Turbine Reduction Gear in Relation to Battleship Fighting Power. how light reduction gear turbines would add two 14-inch guns to the "Nevada." Ills. 2000 w. Sci Am-Oct. 25, 1918. No. 46135.

Turbines

Dunlop Internal-combustion Hydraulic Turbine Transmission for Marine Propulsion. Illustrated description of this hydraulic turbine and its action. 1500 Mech Wld--April 25, 1913. 41924 A.

Steam Turbines. B. A. Strait. Describes the Curtis marine turbine, the Parsons marine steam turbine, and the Terry turbine. Ills. 2000 w. Pro U S Nav Inst—June, 1918. No. 43175 E.

A Device to Facilitate the Coupling of Cruising Turbines. Harold E. Yarrow. Read before the Inst. of Nav. Archts. Describes devices which will facilitate the

coupling of the clutches. Ills. 1000 w. Mech. Engr—July 4, 1913. No. 43711 A. Some Considerations on Turbine Driven Apparatus Installed on Warships (Alcune considerazioni sugli apparati motori a turbina installati a bordo delle navi da guerra). Giuseppe Belluzzo. A study of various turbine types and their serviceability. Ills. 5200 w. Rivista Marittima

—June, 1913. No. 43587 E + F.

See also Geared Turbines, under Ma-

RINE AND NAVAL ENGINEERING; and Turbines, under MECHANICAL ENGINEERING. Steam Engineering.

United States Navy

Annual Report of the Secretary of the Navy for the Fiscal Year 1912. G. v. L. Meyer. Review of the proceedings of the year in all branches of the depart-

Ventilation Yachts

ment, with recommendations for increased

fleet. 67 pp. Navy Department, Washington—Nov. 20, 1912. No. 37839 N.
Engineering Progress in the U. S.
Navy. C. W. Dyson. A review of recent improvements, especially the choice of propelling machinery for heavy vessels of moderate speed. Ills. 6500 w. Soc of Nav Archts & Marine Engrs, No. 3— Nov. 21, 1912. No. 37686 N.

The Design and New Construction Division of the Bureau of Construction and Repair of the Navy Department. R. H. Robinson. Deals with methods of handling an organization engaged in design and in passing on matters of new construction. Ills. 6500 w. Soc of Nav Archts & Marine Engrs, No. 2-Nov. 21, 1912. No. 37685 N.

Ventilation

Ship Engine-Room Ventilation. Illustrated description of the new method of ventilation installed on the "Lusitania." 800 w. Engr. Lond-Aug. 29, 1913. No. 45045 A.

The Ventilation of Modern Battleships. R. D. Gatewood and Charles M. Oman. Discusses the need of ventilation, the difficulties, the aids and methods available. 6000 w. Pro U S Nav Inst—Sept., 1913. No. 45421 E.

Yachts

The American-Built Steam Yacht Lydonia. A. S. Reed, Jr. Illustrated description of a yacht built at Wilmington, Del., and its equipment. 4000 w. Int Marine Engng—Feb., 1913. No. 39655 C. Gas Engine Yacht. Robert MacIn-

tyre. Illustrated description of the "Y Ddraig Goch," a Clyde-built, ocean-going,

gas-engined yacht. 500 w. Sci Am—Aug. 30, 1913. No. 44898.

Development and Status of German Yachting (Entwicklung und Stand des deutschen Segelsports). F. W. von Viebahn. A review of the situation, with club memberships, some of the meets, and descriptions of representative yachts. Ills. Serial, 1st part. 3600 w. Schiffbau—Aug. 27, 1913. No. 46047 D.

MECHANICAL ENGINEERING

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Aeroplanes

AERONAUTICS

Aviation

Aeroplanes

Theory of the Aeroplane (Teoria degli aeroplani). Ingino Saraceni. This first part gives brief historical sketches of the early theories. Ills. Serial. 1st part. 1500 w. Industria—April 13, 1913. No.

Burgess Aeroplanes. Illustrated description of a military tractor biplane, a coast-defence hydro-aeroplane, and a flying-boat. Plate. 2500 w. Engng—Oct. 3, 1913. No. 45858 A.

Air Resistance

Wind Force on Plates and other Test Materials Considering Modern Theory and Experiment (Die Windkräfte an Platten und andern Versuchskörpern nach dem heutigem Stand von Theorie und Versuch). O. Föppl. Discussion on recent experiments on air resistance. Ills. 8500 w. Zeitschr des Ver deutscher Ing-Nov. 30, 1912. No. 38453 D.

Air Friction. A. P. Thurston. scribes experiments made to determine the magnitude of the friction of air flowing over smooth surfaces and the law of its variation, in as simple a form as possible for use by engineers in the design of flying machines and other structures. 3000 w. Engng — Jan. 24, 1913. No. 39795 A.

Air Resistance and Experiments on Small Models (La résistance de l'air et les expériences sur les modèles réduits). E. Jouguet. A contributory study of the fundamental laws and air perturbations. Ills. 1500 w. Rev de Mecan-Jan., 1913. No. 40588 E + F.

Airship Fabric

Airship Envelope Fabric. Reproduced from the Engng. Sup. of the London Times. Discusses its manufacture and requirements. 2200 w. Sci Am Sup-April 26, 1913. No. 41617.

Altitude

A Graphic Method for Determining the

Altitude of Aeroplanes. Giuseppe Pesci. Explains the construction of a nomogram which will do away with the numerical computations of formulae. 1500 w. Pro U S Nav Inst—Dec., 1912. No. 88644 E.

Altitude Recording

The Measurement of the True Static Pressure in a Moving Fluid—Application to an Aeroplane Barograph. Dr. A. F. Zahm. Indicates how to avoid or evaluate errors caused by the rush of air past the instrument. Ills. 2200 w. Jour Fr Inst—May, 1913. No. 42268 D.

On the Physics of the Atmosphere. W. J. Humphreys. Gives physical explanations of atmospheric phenomena. Ills. 8500 w. Jour Fr Inst—March, 1913. No. 40881 D.

Autostable

The Autostable. W. I. Chambers. Describes Mr. Drzewiecki's tandem plane design. 1200 w. Sci Am Sup—Feb. 8, 1913. No. 39725.

Aviation

Aeronautics. Review of progress during the past year. 4000 w. Engr, Lond
—Jan. 3, 1913. No. 39169 A.

Basis for Development in Aviation in 1913 (Die Grundlagen für die Entwick-lung der Flugtechnik im Jahre 1913). Roland Eisenlohr. Details of the tendencies in development. Ills. 4400 w. Zeit des Ver deutscher Ing-May 31, 1913. No. 43015 D.

Maritime Aviation. René Daveluv. Discusses the form and manner in which aviation can best be adapted to the needs of the navy. 5500 w. Pro U S Nav Inst —Sept., 1913. No. 45423 E.

The New Science of Aerial Navigation (La nuova tecnica della navigazione aerea). G. A. Crocco. A review of the later theories of aerodynamics, aero-technique and aeronautics, especially relating to dirigible construction.

AERONAUTICS

Dirigibles Biplanes

3000 w. Ann d Soc d Ing e d Arch Ital
—Aug. 1, 1913. No. 45864 D.

Pegoud's Remarkable Performances. Illustrated account of the feats of flying upside down, looping the loop, rolling over sideways, and diving tail first in a monoplane. 1500 w. Sci Am—Oct. 18, 1913. No. 45919.

The Rheims Aviation Meeting and the Gordon Bennett Cup Race. John Jay Ide. A report of the winners with description of their machines. 3000 w. Sci Am Sup
—Oct. 25, 1913. No. 46138.

Biplanes

The New 80 H. P. Farman Biplane (Der neue 80 P. S.-Farnam-Doppeldecker). Ernst Heinkel. Some of the leading points of the latest model. Ills. 1400 w. Motorwagen—April 10, 1918. No. 42134 D.

The Biggest Flying Machine in the World. Brief illustrated description of the remarkable biplane of Sikorsky, which flew over an hour with seven passengers. 1000 w. Sci Am—Oct. 11, 1913. No. 45755.

Catapult

Catapulting a Hydro-aeroplane from a Fighting Ship. Robert G. Skerrett. A review of the hydro-aeroplane development, with illustrated description of Capt. Chalmer's catapult for launching aeroplanes from battleship turrets. 1200 Sci Am-Dec. 14, 1912. No. 88159.

An Aeroplane Catapult. Illustrated description of the apparatus devised by Washington I. Chambers for getting hydro-aeroplanes away from a ship in the quickest manner. 1800 w. Engr, Lond—Dec. 13, 1912. No. 38531 A.

Compasses

The Compass in Aviation (Der Kompass im Flugzeug). R. Topp. Discusses the value of compasses for aviators, discussing types and methods of using. Ills. 3400 w. Motorwagen—Dec. 20, No. 39023 D. 1912.

Control

The Two-Rudder Control System of croplanes. Philip Wakeman Wilcox. Aeroplanes. Illustrated description of a novel system of aeroplane control, dispensing with a vertical rudder. 3000 w. Sci Am Sup—April 5, 1913. No. 41056.

Design

Strength of Wings of Aeroplanes. A study of the stresses and how they may be met. Considers the staying of monoplane wings. 3000 w. Engng—Nov. 15, 1912. No. 37826 A. The Theory of Aeroplane Dimensions.

Abstract of observations by Archibald R. Low, which sums up much of the work done by French investigators. 1500 w. Engng—Jan. 10, 1918. No. 39263 A. The Comparative Efficiency of Eiffel

Surfaces. Robert D. Andrews. Studies in aeroplane design. 1000 w. Sci Am Sup—May 17, 1913. No. 42200. Some Possible Perfections in the Aero-

plane (Sur la possibilité de quelques perfectionnements a l'aéroplane). Constantin. Discusses possible changes in control and wing design, and the effects of such changes in practice. Ills. 10,000 w. Mem Soc Ing Civ de France—May, 1913. No. 43554 G.

The Laws of Similitude. L. Bairstow. Considers their application to aeroplane design. 2500 w. Sci Am Sup-Aug. 16, 1913. No. 44357.

Development

Aeroplane, Motor, or Aviator? L. Ovington. An estimate of the relative importance of these three prime factors in the progress of aviation. Ills. 2000 Engineering Magazine—Dec., 1912. No. 37789 B.

Aeronautical Progress. J. D. Fuller-A review of the present state of affairs, discussing probable lines of development. 15800 w. Jour Roy U Serv Inst—March, 1913. No. 41267 N.

The Present Day Development of the Aeroplane. Berry T. Stevens. Aims to show what is being accomplished in the aviation field at the present time and what can be expected of the aeroplane of the future. 1200 w. Wis Engr.—March, 1913. No. 41577 C.

A Method of Distributing the Suspension Load in Dirigible Construction (Sur une Méthode de répartition des suspentes dans la construction des dirige-ables souples). P. Lenoir. Mathematical discussion. Diagrams. 2000 w. Tech Mod—April 1, 1913. No. 41522 D.

A Journey in a Zeppelin. Carl Dienstbach. An account of impressions of a trip in the airship "Viktoria Luise." Ills. 1500 w. Sci Am-May 17, 1913. No.

42096.

The Rigid Dirigibles "Spiess" and "Zeppelin" (Les dirigeables rigides "Spiess" et "Zeppelin"). G. Espitallier. A comparative study of French and German constructive methods as shown by these types. Ills. 7000 w. Genie Civil—

May 24, 1913. No. 43083 D.
Filling and Emptying Zeppelin Air
Ships (Füllung und Entleerung von Zeppelin-Luftschiffen). O. Ebersbach. Outline of the various steps to be taken. 3000 w. Der Motorwagen—June 10, 1913. No. 43536 D.

Comparison of French and German

Strength in Dirigible Airships. A critical comparison showing why Germany is the leading air power. 1800 w. Sci Am -Aug. 16, 1913. No. 44351.

Over Germany in an Airship. Illustrated account of impressions by a traveller on the "Viktoria Luise." 2500 w.

Eng Rec—Aug. 30, 1913. No. 44895.
Dissecting a Military Airship. Alfred Gradenwitz. Illustrated description of an interesting experiment with the German dirigible "VI." 600 w. Sci Am—

Aug. 30, 1913. No. 44897.

The Latest French Dirigibles Dirigeables françois les plus récents). L. Marchis. General construction and dimensions of the "Spiess," "Commandant Coutelle" and "Fleurus." Ills. 3600 Tech Mod-Sept. 1, 1913. No. 45339 D.

Engines

The Aeroplane Engine. Sidney F Walker. Discusses the requirements of the engine and considers types, especially the Gnome engine. Ills. 2000 w. Prac Engr—Nov. 7, 1912. No. 37620 A. Aviation Motors in Paris. Illustra-

tions and critical review of types. w. Engr, Lond—Nov. 15, 1912. 2500 87830 A.

Aeroplane Engines and Their Construction (Ueber Flugmotoren und deren Konstruktion). Julius Spiegel. Construction principles of some of the leading types of European engines. Ills. Serial. 1st part. 8500 w. Motorwagen-Oct. 20, 1912. No. 37458 D.

Aeroplane Engines. Reviews a paper by A. Graham Clark, read before the Inst. of Auto. Engrs., and dealing with the various aspects of aeronautical engine design. 1500 w. Engrg—Dec. 20, 1912. No. 38891 A.

The 100 H. P. Green Aero Engine. Illustrates and describes details. Autocar—Aug. 80, 1913. 45024 A.

England

The Work of the Government Aeronautical Committee. A summary of the principal features appearing in the appendices to the recently issued report of the Advisory Committee for Aeronautics. 3000 w. Engr, Lond—Nov. 15, 1912. Serial. 1st part. No. 37828 A.

Exhibitions The London 1912 Olympia Show (Die Londoner Olympia-Schau des Jahres 1912). K. Schirmbeck. Reviews some of the unusual features presented. Ille 4800 w. Zeit des Mitt Motor Vereins-Ills.

Dec. 30, 1912. No. 39027 D.
The Fourth Paris Aeronautic Exhibit (Die vierte Pariser Luftschiffahrts-Ausstellung). Ansbert Vorreiter. Illustrated review of the types exhibited. Serial, 1st part. 4500 w. Zeitschr des Ver deutscher Ing—Jan. 18, 1913. No. 40042 D.

The Aero Exhibition at Olympia. Gen

eral description and details of exhibits at an exhibition in England devoted to areoplanes and dirigibles. Ills. 6500 Engng—Feb. 21, 1913. No. 40314 A Ills. 6500 w.

Aeroplanes at the Recent Aero Exhibition at Olympia. Drawings and description of two aeroplanes exhibited, with editorial review of the Olympia Show. 4500 w. Engng — Feb. 28, 1913. No. 40486 A.

The Fourth Aerial Locomotion Exhibit at Paris. (Le IVe Salon de la Locomotion Aérienne, a Paris). G. Espitallier. Describes leading types exhibited at the Paris show, Oct. 27 to Nov. 10. Ills. Serial. 1st part. 7000 w. Genie Civil—Nov. 9, 1912. No. 37522 D.

Novelties at the Paris Aviation Show. Illustrated review of exhibits. 3000 w. Sci Am Sup—Nov. 30, 1912. Serial. 1st part. No. 37976.

Fourth Paris Aviation Salon. The Brief illustrated review of the show with mention of recent improvements. 1500 w. Sci Am—Nov. 30, 1912. No. 37973.

See also Engines, under Aeronautics.

Aerial Flight. Henry Reginald Arnulph Mallock. Considers the principles involved in ballooning and flying. 36 pp. Inst. of Civ. Engrs-April 19, 1912. No. 42371 N.

Flying Machines
Flying Machines. A. V. Roe. A review of the development. Ills. 5000 w. Manchester Assn of Engrs—March 15, 1913. No. 48294 N.

Germany

German Aeroplane Construction. 1911-1912 (Die deutschen Flugzeugbauarten, 1911-1912). Herr Eisenlohr. Reviews the chief characteristics of German construction both in monoplanes and bi-planes. Illus. 3300 w. Zeitschr des Ver deutscher Ing—Sept. 28, 1912. No.

Report on the Condition of Aeronautics in Germany. Extracts from a report by the American Consul-General, Bellin, April 4, 1913. 2500 w. Sci Am Sup— May 24, 1913. No. 42316.

Hangars

New Hangars for Military Uses. lustrates and describes a portable type brought out in Italy, of the Bosco and Donadelli system. 1000 w. Sci Am— Jan. 18, 1918. No. 39130.

The Hangar at the Potsdam Aviation

Field (Die Luftschiffhalle im Luftschiff-

Hydro-Aeroplanes

AERONAUTICS

Moneplane

hafen zu Potsdam). Details of construction for the housing of large dirigibles adopted at Potsdam. Ills. 2700 w. Zeit des Ver deutscher Ing—May 3, 1913. No. 42145 D.

Hydro-Aeroplanes

The Donnet-Lévêque Hydro-aeroplane. John Jay Ide. Illustrated description, with scale drawings, of the most successful French flying boat, with report of trials. 1200 w. Sci Am Sup—Nov. 2, 1912. No. 37159.

Water Flight (Der Wasserabflug). M. Raabe. Discusses the various designs best suited to this service. Ills. Serial. 1st part. 3500 w. Motorwagen—Oct 31, 1912. No. 38440 D.

New French Hydro-Aeroplanes (Neue französische Wasserflugzeuge). Ernst Heinkel. Illustrated description of leading types. 2800 w. Motorwagen—Feb. 28, 1913. No. 41446 D.

The Longitudinal Stability of Skimmers and Hydro-Aeroplanes. J. E. Steele. Read before the Inst. of Naval Archts. Considers types and problems connected with their inherent stability. Ills. 2500 w. Mech Engr—April 18, 1913. Serial. 1st part. No. 41759 A.

The Construction of Hydro-Aeroplanes (La Construction des Hydraéroplanes). A. Delaunay. General description of the competitors at the Monaco meet in April and the Deauville meet in August. Ills. Serial, 1st part. 5000 w. Genie Civil—June 21, 1913. No. 43574 D.

Longitudinal Stability of Skimmers and Hydro-Aeroplanes (Die Längestabilität von Gleitbooten und Hydro-Aeroplanen). Herr Schaffren. Study of the forces exerted on the boats during high speeds. Ills. Serial, 1st part. 1700 w. Motorwagen—July 10, 1913. No. 44665 D.

Aeroplanes at the Lake Constance Water-meet, 1913 (Die Flugzeuge vom Bodensee-Wasserflug, 1913). Woland Eisenlohr. General description of the entries. Ills. 3300 w. Zeit des Ver deutscher Ing—Sept. 13, 1913. No. 46038 D.

See also Seaplane and Stability, under Aeronautics.

Hydroplanes

Development of the Hydroplane. Alessandro Guidoni. Abstract translation from the Italian. Discusses the difficulties of design and methods of solving the problem, the equilibrium of the apparatus, floats, etc. Ills. 3000 w. Engng—Jan. 31, 1913. No. 39805 A.

Lieut. Calderara's Hydrovol. Brief illustrated description. 500 w. Engr, Lond—Feb. 21, 1913. No. 40317 A.

Italian Institute

Institute of Italian Naval and Mechanical Engineers. Review of papers presented at the December meeting on the subject of aviation. 2500 w. Engr., Lond—Jan. 17, 1913. No. 39485 A.

Management

General Theories on the Management of the Aeroplane (Théorie générale des régimes de l'aéroplane). Georges de Bothezat. Discusses the management of aeroplanes in flying, ascending and descending in calm air and in steady breezes. Diagrams. 13000 w. Rev de Mecan—Apr. 30, 1913. No. 43060 E + F.

Meteorology

The Airman and the Weather. Charles Fitzhugh Talman. The important part aeronautic meteorology is destined to play in the navigation of the air. Ills. 2000 w. Sci Am—Aug. 2, 1913. No. 44074.

Military

The Military Aeroplane Competition. Editorial review of the recently issued report of the competition held last August. 1500 w. Engng—Nov. 8, 1912. No. 37642 A.

Bomb-Throwing from Aeroplanes (Bombenwerfen aus Flugzeugen). Hans Zeyssig. Discusses and describes recent tests. Ills. Serial. 1st part. 3200 w. Motorwagen—Oct. 31, 1912. No. 38439 D.

Achievements of Military Aircraft. H. Bannerman-Phillips. Considers lessons taught by the European manœuvres and by military campaigns. Ills. 3300 w. Sci Am—April 5, 1913. No. 41038.

Possibilities of Air Warfare. C. W.

Possibilities of Air Warfare. C. W. Smith. Discusses some of the possible terrors of such a contest. 1800 w. Yale Sci M—April, 1913. No. 42581 C.

The Work of Aircraft in the French Manœuvers, 1913. H. Bannerman-Phillips. Shows the aeroplanes were extremely useful. Ills. 2500 w. Sci Am—Oct. 25, 1913. No. 46137.

Models

The Laws of Similitude. L. Bairstow. Lecture before the Aernautical Soc. of Gt. Britain. Shows the intimate connection of laws of similitude which constitute the theory of the use of models, and aerodynamics. Ills. 2500 w. Engng—Feb. 14, 1913. No. 40133 A.

Monoplanes

The Etrich Monoplanes. Stanley Yale Beach. Illustrates and describes several of the latest aeroplanes of the Austrian pioneer. 1200 w. Sci Am Sup—Jan. 18, 1913. No. 39178.

Austrian pioneer. 1200 w. Sci Am Sup—Jan. 18, 1913. No. 39178.

The Monoplane "Colombia" (Monoplano "Colombia"). Francisco A. Pinto Groot. Plans and description of an unusual type, having close-fitting planes

and double-pointed empennage. Ills. 1500 w. Anales de Ingenieriá—Jan., 1913. No. 39077 D.

The Moreau Automatically Balanced Monoplane. Illustrated description of a monoplane provided with an automatic stabilizer, which has been tested in Paris. 1200 w. Sci Am — Feb. 8, 1913. No. 39717.

The Morane-Saulnier Monoplane. John Jay Ide. Detail drawings and illustrated description of this racer in its present form, and brief reference to other types. 2000 w. Sci Am Sup—March 15, 1913. No. 40640.

The Hanriot-Ponnier Monoplane (Eindecker Hanriot-Ponnier). A. Dumas. Description of method of stabilizing, wings, body, and construction of this new French model. Ills. and Plates. 2200 w. Motorwagen—May 20, 1913. No. 43028 D.

Motor Design

The Royal Prize Competition for the Best German Aeroplane Motor (Der Wettbewerb um den Kaiserpreis für den besten deutschen Flugmotor). Hugo H. Kroner. Details of qualifications and tests, and description of Benz motor, which won first prize. Ills. Serial. 1st part. 2200 w. Elek Rund—March 27, 1913. No. 41475 D.

Performance and Results of the Competition for the Royal Prize for the Best German Aeroplane Motor (Die Durchführung und das Ergebnis des Wettbewerbes um den Kaiserpreis für den besten deutschen Flugzeugmotor). F. Bendemann. The conditions of the competition; the tests made, and results. Serial. 1st part. 6600 w. Zeit des Ver deutscher Ing.—March 29, 1913. No. 41465 D.

Data from Germany Aviation Motor Contest of Interest to Builders of Modern Automobile Motors. Observations from report of progress. Considers the disposal of heat-absorbed by the piston head one of the main factors. Ills. 3000 w. Automobile—Oct. 16, 1913. No. 45902.

Motors

Testing Plant for the Imperial Prize Competition for the Best German Aeroplane Motor (Die Versuchsanlage für den Wettbewerb um den Kaiserpreis für den besten deutschen Flugzeugmotor). F. Bendemann. Outlines the tests to be made, and testing apparatus for the models submitted. Ills. 6600 w. Zeitschr des Ver deutscher Ing—Nov. 16, 1912. No. 38447 D.

The Gyroscopic Action of Rotary Motors in Aeroplanes. Herbert Chatley. A. discussion of the effects. 800 w. Engng—Feb. 7, 1913. No. 39919 A.

The Rotating Cylinder Motor. Lenox R. Lohr. Illustrated discussion of motors of this type, their faults, and the future outlook. 2000 w. Sib Jour of Engag—March, 1913. No. 40924 C.

Propellers

Whirling-Table at East London College. A. P. Thurston. Illustrates and describes a simple, cheap, and effective whirling-table for propeller and aeroplane tests. 2000 w. Engng—Nov. 8, 1912. No. 37637 A.

Propellers for Aeroplanes. G. Eiffel. A résumé of the experiments of capacity and powering made at the laboratory of the Champ de Mars. Editorial note. 3000 w. Cassier's Mag—Nov., 1912. No. 38363 B.

Saint-Cyr

Aerotechnique Studies at the Saint-Cyr Institute (Les Etudes d'Aérotechnique a l'Institut de Saint-Cyr). Ch. Maurain. The object of the institute and a review of the aerotechnical experiments made in this well-equipped research laboratory. Ills. 7200 w. Rev gen des Sciences—March 30, 1913. No. 41510 D.

Scientific Instruments

Scientific Instruments: Their Design and Use in Aeronautics. Horace Darwin. The first Wilbur Wright memorial lecture. A discussion of instruments used on aeroplanes. Ills. 7000 w. Jour Soc of Arts—July 4, 1913. No. 43701 A.

Scientific Instruments: Their Design and Use in Aeronautics. Horace Darwin. Lecture before the Aeronautical Soc. of Gt. Britain. A discussion of instruments used on aeroplanes and the difficulties in designing and using. Ills. 4500 w. Engng—May 23, 1913. Serial. 1st part. No. 42780 A.

Seaplane

100 Horse-Power Avro Seaplane. Illustrated description of a type similar to those built for the German Government. 700 w. Engr, Lond—Oct. 3, 1913. No. 45869 A.

Service

Non-stop Delivery to Aeroplanes. From Aeronautics. Illustrated description of a proposed device for taking on board supplies while in full flight. 2000 w. Sci Am Sup—Nov. 23, 1912. No. 37737.

Speed

The Speed Limitations of Air Travel. R. Emerson. Lessons from the International Races at Chicago during the summer. Ills. 3300 w. Cassier's Mag—Oct., 1912. No. 37152 B.

Stability

Stability, Relations between Stability, and Safety (Stabilité, Relations de la Stabilité et de la Sécurité). L. Girard-

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Agricultural Motors

ville. Discusses design of aeroplanes tending toward elimination of accident due to air currents. 4400 w. Mem Soc Ing Civ de France—Sept., 1912. No. 37486 G.

Stability Devices for Aeroplanes. Mervyn O'Gorman. Considers devices aiming to secure safety in the air, discussing speed, air disturbances, screw propulsion, etc. 7500 w. Engng—Jan. 31, 1913. No. 39803 A.

The Longitudinal Stability of Skimmers and Hydro-Aeroplanes. J. E. Steele. Read before the Inst. of Nav. Archts. Reports an investigation of machines coming under these heads, considering each type in detail. Drawings. 4000 w. Engng—March 21, 1913. No. 41016 A.

m detail. Drawings. 4000 w. Engng—March 21, 1913. No. 41016 A.
On the Static Longitudinal Stabilty of Aeroplanes (Ueber die statische Längsstabilität der Drachenflugzeuge). Carl Weselsberger. Results of experiments made at Münich on a dragon-fly shaped model. Ills. 4400 w. Zeit des Verdeutscher Ing — March 29, 1913. No. 41467 D.

General Theory on the Stabilizing Action of the Horizontal Planes of the Aeroplane (Théorie rénérale de l'action stabilisatrice des empennages horizontaux de l'aéroplane). Georges de Bothezat. From general observation on the diverse methods of effecting aeroplane stability. Diagrams. 15000 w. Rev de Mecan—Aug. 31, 1913. No. 45359 E + F. The Sperry Aeroplane Stabilizer. Ex-

The Sperry Aeroplane Stabilizer. Explains the great importance of automatic stabilizing, and gives illustrated description of the invention of Elmer A. Sperry, and its working. 2500 w. Engr, Lond—Inna 6, 1018. No. 42890 A.

June 6, 1918. No. 42890 A.

Making the Aeroplane Safe by the Gyroscopic Stabilizer. Robert G. Skerrett.

Description of the Sperry gyroscopic aeroplane stabilizer. Diagram. 1500 w. Sci

Am—June 7, 1918. No. 42666.

Stability in Flying Machines. Albert

Adams Merrill. Analyzes the forces involved in flying in order to determine if, by changing the design of machines, it is possible to make flying safer. 4500 w. Jour Am Soc of Mech Engrs—Oct., 1913. No. 46139 D.

See also Autostable and Monoplanes, under Aeronautics.

Stabilizers

See also Hydro-Aeroplanes, under Aeronautics, and Gyroscopes, under Machine Elements and Design.

Stream Lines

Stream Lines Around Obstacles to Air Currents. Describes methods used to obtain records of air movement. Ills. 1200 w. Sci Am Sup—April 26, 1913. No. 41616.

Stresses

Stress Considerations in Aeroplane Design. Dr. A. F. Zahm. Considers some of the questions which can be answered directly by simple analysis. Ills. 4000 w. Jour Fr Inst — June, 1913. No. 43248 D.

United States

Aviation Today, and the Necessity for a National Aerodynamic Laboratory. W. Irving Chambers. An appeal for national research and verification facilities in a well-equipped United States laboratory. 10500 w. Pro U S Nav Inst—Dec., 1912. No. 38648 E.

Velocities

Aeroplanes and Dirigibles (Aeroplani e Dirigible). A. Guidoni. A study of comparative volocities. Diagrams. 3600 w. Rivista Marittima—March, 1913. No. 42199 E. & F.

Warfare

Fighting in the Air. Carl Dienstbach. Remarks on tests made to determine an airship's ability to defend itself against aeroplanes, and other forms of aerial contests. 1500 w. Sci Am—Aug. 2, 1918. No. 44072.

AUTOMOBILES

Abbott

Six-Cylinder Abbott Added for 1914. Illustrated description of interesting details of the latest model. 1800 w. Automobile—Aug. 21, 1914. No. 44531.

Accelerometer

Detecting Resistance—Saving Fuel. W. C. Marshall. Describes the accelerometer, which gives a complete check on the motor and running gear. Ills. 2200 w. Automobile—April 17, 1913. Serial. 1st part. No. 41842.

Accumulators

Instructions for the Installation and Care of Storage Batteries Used in Connection with Electric Starting and Lighting Systems on Automobiles. 1000 w. S A E Bul—Aug., 1913. No. 45092 N.

Agricultural

Machines at the General Agricultural Show (Les machines au concours général agricole). H. Pillard. A review of the tractors, motor plows, etc., exhibited in the 1913 show. Ills. Serial. 1st part. 4000 w. Tech Mod—May 1, 1913. No. 42178 D.

Agricultural Motors

Agricultural Motor Development in Europe. Brief descriptions of types of

AUTOMOBILES

Bearings

motor plows, motor cultivator. and subjects considered at meeting of the French Motor Culture Assn. Ills. 2200 w. Horseless Age—Oct. 15, 1913. No. 45994. See also Motor Plows, under Automo-

biles.

Agriculture

Gasoline and Oil Power on the Farm. Philip S. Rose. Explains how engines have lightened farm work. Ills. 1600 w. Sci Am—Feb. 1, 1913. No. 89609.

Alco for 1918 Possesses Many New Features. Illustrated detailed description of latest model. 2000 w. Horseless Age—Nov. 6, 1912. No. 37361. Alda

Alda Cars. Illustrated description of a new high-grade French car. 1500 w. Auto Jour-May 17, 1913. No. 42525 A.

Ambulances

The Automobile in Service of the Sick and Injured (Das Automobil in Krankentransport- und Unfalldienst). Hr. Blumenthal. Description of a number of German motor ambulances in hospital and veterinary service. Ills. 2700 w. Auto Rund—Sept. 15, 1913. No. 46056 D.

Anti-vibrator

The Lanchester Anti-vibrator. F. W. Lanchester. Brief description of a system of securing perfect balance on fourcylinder engines. Ills. 1000 w. car—Jan. 25, 1913. No. 39765 A. Auto-

Argyll

The 15-30 h. p. Sleeve Valve Argyll. Illustrated description of this new model. 1200 w. Autocar—Nov. 9, 1912. 37626 A.

The 15-30 h.p. Sleeve Valve Argyll. Illustrates and describes the interesting features. 2200 w. Autocar-March 15, 1913. No. 40802 A.

Armstrong-Whitworth

The 30-50 h. p. Six-cylinder Armstrong-Whitworth. Illustrated detailed description. 1000 w. Autocar—May 17, 1913. No. 42527 A.

Arrol-Johnston

The 15.9 h. p. Arrol-Johnston. Brief illustrated description of the four-cylinder, four-speed car. 1000 w. Autocar—May 10, 1913. No. 42272 A.

Atmospheric Changes

Notes on Power Variation with Atmospheric Changes. Herbert Chase. Reports results of tests made. 700 w. S A E Bul—Sept., 1913. No. 46121 N.

Austro-Daimler

The 27-80-H.P. Austro Daimler. Illustrates and describes details of an interesting car. 1000 w. Auto Jour—Feb. 1, 1918. No. 39770 A.

Automobile Engineers

Training of Automobile Engineers. B.

W. Ainsworth, H. Burchell, C. E. G. House, and G. Campbell Taylor. Read before the Inst. of Auto. Engrs. Discusses the need of specialized training and what it should embrace. 3500 w. Auto Jour-Jan. 11, 1913. No. 39245 A.

The Balance of Rotating Cylinder Ennes. H. Grinsted. A mathematical udy. Ills. 3000 w. Horseless Age gines. study. June 18, 1913. No. 42979.

Batteries

1913 Vehicle Batteries. Information concerning types of batteries most in use. 2500 w. Automobile—Jan. 2, 1913. No. 38823.

The Philadelphia Thin Plate Battery. Explains its characteristics and the reasons for its success. Ills. 3500 w. Horseless Age—March 5, 1913. Serial. 1st part. No. 40363.

Batteries. C. C. Munson. Discusses the requirements for a lighting or ignition system to get the best results, also general discussion. 6200 w. S A E Bul -April, 1913. No. 42342 N.

Thin Plate is Latest Battery Develop-Discusses the construction and operation of the electric vehicle storage battery, comparing thick and thin plate types. Ills. 2200 w. Automobile—Oct. 28, 1913. No. 46155.

See also Motor Trucks, under Auto-

mobiles.

Battery Charging
A Vibrating Rectifier. Q. A. Brackett. Illustrates and describes a device for changing alternating current of standard voltage to low-voltage direct-current

for automobile lighting systems. 2500 w. Elec Jour—Dec., 1912. No. 38625. Rheostats for Battery Charging. Il-lustrated description of a solenoid-operated rheostat for automatic regulation or current. 2000 w. 2000 w. Automobile—Jan. 2.

Motor-Generators and Rectifiers. lustrates and describes apparatus charging batteries at home from alter-2500 w. nating-current mains. mobile—Jan. 2, 1913. Charging a Battery. No. 38820.

A practical out-2500 w. Autoline of the best method. nobile-Jan. 2, 1913. No. 88822.

The 12-H.P. Bayard Car. Illustrated detailed description of a new French car. 1200 w. Auto Jour-March 22, 1913. No. 40998 A.

Bearings
Utility of Double Purpose Bearings in
C. F. Olin. Dis-Automobile Mechanism. C. F. Olin. Discusses the properties of this type of bearings with example of its application in

AUTOMOBILES

Berliet

automobile construction. Ills. 3500 w. Horseless Age — March 5, 1913. No. 40364.

Timken Roller Bearings. Illustrates and describes the theory and method of their construction. 4500 w. Autocar— April 5, 1913. No. 41217 A.

Berliet

The 20-25 H. P. Berliet. Illustrated description of a French model shown at Olympia. 1200 w. Auto Jour-Nov. 9, 1912, No. 37630 A.

Biautogo

The Biautogo. Illustrated description of a car on two wheels, with an 8-cylinder engine, 4 speeds and reverse, a compressed air engine-starter, and an electric lighting system. 1800 w. Autocar—Aug. 16, 1913. No. 44707 A.

Bodies

The All Metal Body. G. E. Watts. Explains advantages and discusses types. Also describes a British all metal body. Ills. 1500 w. Horseless Age—Nov. 20, 1912. No. 37769.

Some Notes About Body-work at Olympia. An illustrated criticism dealing with interesting details of design. 7500 w. Autocar—Dec. 7, 1912. No. 38228 A.

Limousine and Landaulet Types Combined. Illustrated description of a new type of all-season body. 1300 w. Automobile - March 20, 1913. Serial. 1st part. No. 40751.

The Use of Sheet Metal on Bodies (Die Herstellung von Blechkörpern). August Bauschlicher. General remarks on the utility of sheet metal for various parts of the car body, and notes on shaping and securing. Ills. 4400 w. Motorwagen—Aug. 10, 1913. No. 44666 D.

Brakes

Method of Brake Capacity Determina-tion. S. I. Fekete. Gives a study of brake resistance. 1200 w. S A E Bul —Dec., 1912. No. 39303 N.

Jackshaft vs. Double Rear-Wheel Brakes. Arthur M. Laycock. An investigation from a designer's outlook. 2200

w. SAE Bul—May, 1913. No. 42474 N. Jackshaft vs. Double Rear Wheel Brakes. Arthur M. Laycock. Read before the Soc. of Auto Engrs. Investigation, from the designer's viewpoint, showing the disadvantages of jackshaft 2500 w. Automobile—Aug. 7, 1913. No. 44233.

See Gear Changing, under Automobiles.

Cabriolet

The Cabriolet—A New Body Type. George J. Mercer. Illustrates and describes a fully collapsible closed body.

Automobile-Sept. 25, 1913. 2500 w. No. 45432.

Carburetors

Cadillac

The Cadillac. Illustrates and describes interesting features. 2000 w. Auto Jour July 5, 1913. No. 43703 A.

Carbon Deposits

Carbonization of Motors and Its Remedies. Albert L. Clough. Considers the solvent, mechanical and combustion methods of decarbonizing, comparing their efficiency. 2000 w. Horseless Age -Aug. 27, 1913. No. 44872.

Carburetion

The Problem of Carburetion in Its Most Recent Aspects. Albert L. Clough. Claims that decreased volatility of the fuel has lowered the fuel economy and pre-heating of the charge is required to secure the best results. 2500 w. Horseless Age-Nov. 13, 1912. No. 37588.

Carburetion. Robert W. A. Brewer. A study of the subject. 1500 w. Automobile—Nov. 14, 1912. Serial. 1st part. No. 37573.

A Consideration of Certain Problems of Carburetion. Arthur B. Browne. Considers the law of gravity applied to carburetion, effect of temperature, application of the law to various types, etc. Ills. 3000 w. S A E Bul—May, 1913. No. 42475 N.

The Effect of Carburetor Improvements in Quieting Motor Operation. Albert L. Clough. Discusses the remarkable increase in quietness attained and how much of it is attributable to the carburetor and to improved manifolds. 1800 w. Horseless Age—May 28, 1913. No. 42630. Valve Timing and Fuel Economy. Dis-

cusses the importance of correctly designed cams to ensure good carburetion. 3000 w. Autocar — Oct 4, 1913. No. 45836 A.

Carburetors

The Brewer Efficiency Carburetter. Illustrated description of a design aiming to supply a correctly proportioned gaseous mixture at all speeds. 1500 w. Autocar—Jan. 25, 1913. No. 39766 A.

The Racing Claudel Carburetter. Illustrated description of the carburetter used by the winners of the Grand Prix and the Coupe de L'Auto. 1200 w. Autocar—Feb. 1, 1913. No. 39768 A.

Dash Adjustment of the Carbureter. Albert L. Clough. Brief consideration of possible adjustments and the effect on fuel consumption. 1200 w. Horseless Age-March 19, 1913. No. 40752.

Rayfield Carburetors and How They Are Made. Illustrated detailed descrip-tion of this carburetor and the methods

Commercial Vehicles

of manufacture. 3000 w. Horseless Age
—March 12, 1913. No. 40674.
The Motsinger Carburetor and Its De-

velopment. Explains the theory of a development. Explains the theory of a device based on the principle of proportional opening of fuel and air valves. Ills. 4500 w. Horseless Age—March 19, 1913. No. 40753.

The S. U. Carburetor. Brief illustrated description of a simple and entirely automatic type. 800 w. Auto Jour—March 1, 1913. No. 40462 A.

Feps Carburetors and Their Manufacture. Illustrated description of the factory methods and the testing apparatus used. 2500 w. Horseless Age—March 26, 1913. No. 40931.

Kerosene Carbureters. A. C. Bennett.

An account of investigations, describing the present method of vaporization, the difficulties encountered, etc. Discussion. 3500 w. S A E Bul—March, 1913. No. 41259 N.

The Smith Carburettor. Illustrated description of the A and B types and the method of operation. 1200 w. Auto Jour —June 28, 1913. No. 43619 A.

Carburetors or Vaporizers?—Lean Mixtures or Rich? S. M. Udale. A discussion of factors in the carburization of automobile fuels, based on exhaust gas analysis, explaining how such analyses are made. Ills. 3500 w. Horseless Age—Aug. 6, 1913. No. 44231.

New English and French Carburetors (New English and French Carburstons (Neue englische und französiche Vergaser). General description of eight leading types. Ills. 1500 w. Auto Rundschau—July 30, 1913. No. 44661 D. Some of the Difficulties of Kerosene Carburation. P. S. Tice. Gives a sum-

mary of the physical properties of kerosene, discussing those that have made it difficult to develop a kerosene carbureter.

General discussion. 6500 w. S A E Bul—Aug., 1913. No. 45089 N.

The Truth About the Kerosene Carburetor. George M. Holley. Gives results obtained in tests, illustrating and describing a new carburetor. 1800 w. Horseless Age—Oct. 8, 1913. No. 45771.

The New Binks Two-jet Carbureter. Illustrated description showing how waste of fuel is prevented by automatically closed jets. 1500 w. 1913. No. 45837 A. Autocar-Oct. 4,

See also Exhaust, under Automobiles.

Cleaning and Care Taking of Automobiles. M. C. Hillick. Directions for preserving the finish and appearance. 1800 w. Horseless Age—June 11, 1913. No. 42810.

Car-Lighting
New French Car-Lighting Dynamos.

Illustrates and describes two machines of recent design—the "Grada" and the "Stereos" dynamos. 1500 w. Elec Rev, Lond—Aug. 29, 1913. No. 45029 A. See also Electric Equipment, under

Automobiles.

Chain Drives

Adjusting Silent Chain Drives for Camshafts. Explains why adjustment is necessary and describes means found on various English and Continental engines. Ills. 2000 w. Horseless Age—July 2, 1913. No. 43441.

Chalmers

Coupé Design for 1912 Chalmers Chas-George G. Mercer. Gives scale drawings and details of a light 4-passenger body for winter travel. 2000 w. Automobile—Nov. 7, 1912. No. 37326.

Chassis Testing
Modern Chassis Testing. P. P. Dean. Illustrated description of a new chassis testing apparatus intended to do away with road testing. 1500 w. Horseless Age—April 9, 1913. No. 41157.

Clutches

The Design of Clutch Release Shoes. M. Ferry. Gives a method of determining the proper distribution of bearing pressure and wear. Ills. 1000 w. Mach, N Y—Jan., 1913. No. 38718 C. Coal Fuel

See Fuel, under Combustion Motors.

How to Coast an Automobile. Albert L. Clough. Gives three methods of coasting, comparing their advantages. 1500 w. Horseless Age—Oct. 22, 1913. No. 46195.

Cole

Roustabout and Coupé for 1912 Cole. George G. Mercer. Illustrates and describes a runabout model that can be converted into a closed car for winter. 1800 w. Automobile-Nov. 14, 1912. No. 37574.

Stream-Line Bodies and Left Hand Drive Characterize New Cole Models. Illustrates and describes details of the new models. 1500 w. Horseless Age—July 23, 1913. No. 43867.

Temperature Limits in Combustion. Robert W. A. Brewer. Shows that air dilution sets limits of explosion and unexplosion. 1800 w. Automobile—Oct. 2, 1913. No. 45629.

Commercial Vehicles

New York's Gigantic Commercial Vehicle Exhibition Under Way. Illustrated review of the vehicles on exhibition at Madison Sq. Garden and the Grand Central Palace in New York City. 7000

AUTOMOBILES Control Design

Horseless Age—Jan. 22, 1913. No. 39284.

New York's Truck Show Opens. trates and describes commercial vehicles exhibited at Madison Sq. Garden and Grand Central Palace, New York City. Automobile—Jan. 28, 1918. 4000 w. No. 39492.

Commercial Vehicles at the Paris 1912 Salon (Les véhicules industriels au Salon de l'Automobile, à Paris, en 1912). D. Duaner. General résumé of cars on Lition. Ills. 4000 w. Genie Civil No. 39086 D. -Dec. 21, 1912.

Mechanical Observations of the Commercial Car Show. Illustrated review of new features. 5000 w. Horseless Age Jan. 29, 1913. No. 39578 C.

The Motor Driven Commercial Vehicle. Ross Babcock. Illustrated discussion of methods of drive in commercial vehicles. 1500 w. Sci Am-Oct. 25, 1913. No. 46187.

Control

Dangers of Non-Standardized Control. Albert L. Clough. Shows the danger of driving cars other than the one with which motorists are familiar. 2000 w. Horseless Age—June 18, 1913. No. 42980.

Cooling

Some Notes on Water Cooling. Dr. A. M. Low. Shows the advantage to be gained from cooling by internal injection and the principles and parts involved. Ills. 2200 w. Autocar—Aug. 16, 1913. No. 44706 A.

Costs

Cost of Up-Keep of Horse-Drawn Vehicles Against Electric Vehicles. W. R. Metz. Considers the motor-driven vehicle unquestionably cheaper, and the electric vehicle better for city service. The gasoline-driven machines better for long hauls over rough roads. 2500 w. Jour Am Soc of Mech Engrs — April, 1913. No. 41294 D.

Comparative Cost of Automobiles and Horses. Gives figures from 46 cities, giving cost of maintenance during the past year, showing automobiles cheaper

in every case. 3500 w. Munic Jour—Aug. 28, 1913. No. 44798.
Cost of Upkeep of Horse-Drawn Vehicles Against Electric Vehicles. W. R. Metz. Discussion of W. R. Metz's paper. 3500 w. Jour Am Soc of Mech Engrs-Aug., 1913. No. 44514 D.

Cost Systems

Locomobile Truck System. Explains the cost keeping system devised for users of Locomobile trucks. 1600 w. Automobile—May 15, 1913. No. 42086.

Cycar

Cycar. Illustrated detailed description

of this cycle-car. 1500 w. Auto Jour-May 24, 1913. No. 42740 A.

Cyclecars

The Chota Cyclecars. Illustrated description of a car in which simplicity and low running expenses are the essential features. 1600 w. Auto Jour—July 12, 1913. No. 43889 A.

Cyclecars—American and Foreign. Illustrates and describes small cars developed from the motorcycle. 1400 w. Sci Am-Oct. 4,1913. No. 45614.

Cylinders

The Most Efficient Stroke-Bore Ratio. E. P. Batzell. Gives reasons why medium stroke-bore ratio is best. 2000 w. Automobile—Aug. 7, 1918. Serial, 1st part. No. 44363.

Daimler

The Daimler Motor Omnibus and 3-on Lorry Chassis. Illustrated detailed Ton Lorry Chassis. Plate. Engng-5000 w. description. No. 89156 A. Jan. 3, 1913.

New Motor-Omnibus by the Daimler Company in Coventry (Der neue Motor-Omnibus der Daimler Company in Coventry). Details of this new English car. Ills. Serial. 1st part. 3500 w. Motor-wagen—Feb. 20, 1913. No. 40545 D.

Darracq

The New 16-H. P. Darracqs. Illustrated detailed description of this French car with critical remarks. 1500 w. Auto Jour—June 7, 1913. No. 42878 A.

Depreciation

Calculating Depreciation of Commercial Automobiles. Charles Wheeler. Brief consideration of methods. 1000 w. SAE Bul-May, 1913. No. 42472 N.

Design

The Design of Motor Vehicles. H. E. Wimperis. Gives the writer's solution of the problem of finding a fundamental basis for design. 2500 w. Engr, Lond—Nov. 15, 1912. No. 37827 A.

English Car Tendencies for 1913. J. S. First report of the annual Critchley. Olympia exhibition which opened in Lon-

don, Nov. 8. Ills. 7500 w. Automobile

Nov. 14, 1912. No. 37572.

The French School of Engineering.

Analyzes features of French designs.

Ills. 3000 w. Automobile—Nov. 28, 1912. Serial. 1st part. No. 37934.

The Future Car. Walter Baunard. Illustrated review of the development of car bodies at home and abroad. Sci Am-Jan. 11, 1918. No. 39100.

Motor Cars (Kraftwagen). Dr. Riedler. A treatise written at the suggestion of Prince Henry of Prussia, taking up in detail the principles governing the design of automobiles. Ills. Serial. 1st part.

Electric Vehicles

AUTOMOBILES. Details

5000 w. Zeit d Mitt Motorwagen Ver-March 1, 1913. No. 41449 D. The Influence of the Sales Department on the Design of Motor Cars. F. E. Moskovics. Discerns the influence that the sales department may bring to bear on the engineering department, and the advantages of closer contact. 8500 w. S A E Bul—May, 1913. No. 42478 N.

A Briton's American Notes. Information gleaned on a recent tour of American automobile factories in regard to designing and producing cars. 9500 w. S A E Bul—Sept., 1913. No. 46119 N.

See also Engine Design, under Automobiles.

Details

Little-Known Details. Illustrates and describes interesting details from wellknown cars. 1000 w. Auto Jour—Jan. 11, 1913. No. 39243 A.

Development

The Automobile as a Product of Research and Investigation. R. C. Carpenter. From a lecture before the Sigma Xi Soc. An interesting review of the de-velopment. 2500 w. Sib Jour of Engng -June, 1913. No. 43182 C.

Devices

Clever Devices that Help Motorists. Illustrates and describes European ventions that meet real needs. Sci Am-Jan. 11, 1913. No. 39105.

Differential Locks

The Differential Lock. A. C. Woodbury. Explains its purpose and the advantages and objections of its use. 1800 w. Horseless Age-July 23, 1913. No. 43868.

Differentials

The Double Direct Drive. Α. Woodbury. Illustrated technical review of various designs, the difficulties encountered and suggestions for overcoming them, and a description of the Cadillac system. 3500 w. Horseless Age—Aug. 27, 1913. No. 44871.

How to Obtain Gasoline Economy. Arthur Holmes. Suggestions for economy in the operation of an automobile. 1200 Horseless Age — March 26, 1913. No. 40929.

Edwards-Knight

Edwards-Knight, the Latest Arrival in Motordom. Illustrated detailed description of this new pleasure car. 800 w. Horseless Age—Dec. 11, 1912. **38169.**

Electric Equipment

The Gray and Davis Electric Outfit. Illustrated description of a lighting dynamo and engine starting motor as separate units. 1000 w. Autocar-Sept. 6. 1913. No. 45139 A.

Electric Motors

An A B C of the Electric Motor. Sydney Oxberry. Gives an outline of the magnetic principles involved. Ills. 2500 Automobile — Oct. 23, 1913. No. 46154.

Electric Outfits.

Electric Starting and Lighting. J. W. Fitzgerald. Discusses the requirements and the mechanical and electrical workmanship of such outfits. 2500 w. SAE Bul—Feb., 1913. No. 40394 N.

Electric Systems

Electric Lighting and Motor Starting. Chester S. Ricker. Illustrates and describes the electric apparatus used on gasoline cars. 2000 w. Horseless Age—March 26, 1913. Serial. 1st part. No. 40984.

The U. S. L. Electric Starting and Lighting System. Illustrated detailed description of this system as applied to gas-oline automobiles. 2000 w. Horseless Age—March 26, 1913. No. 40932. The Ward Leonard Electric Starting

and Lighting System. Illustrated article describing this system and giving information concerning it. 2500 w. Horseless Age—April 16, 1913. No. 41330.

The Jesco Electric Starting and Light-

ing System. Illustrated detailed description of this system. 2500 w. Horseless Age—April 23, 1913. No. 41611. The Bailey Lighting, Starting and Ig-

nition System. Illustrated description of a new system designed by Benjamin F. Bailey. 3500 w. Horseless Age—June

Bailey. 3500 w. Horseless Age—June 18, 1913. No. 42978.

The Disco Lighting and Starting System. Describes the 6-volt and the 12-volt systems, and the apparatus. Ills. 1500 w. Horseless Age-July 16, 1913. No. 43748.

The Elyria-Dean Starting and Lighting Systems. Illustrated description of the system with directions for its use. 1700 w. Horseless Age-July 9, 1913. No. 43670.

Electric Trucks

The Electric Truck: English Experiments and American Practice. Illustrated account of the progress of these vehicles in the United States, and comparison with England. 3000 w. Elec vehicles in the Universe parison with England. 3000 w. Electronic Rev, Lond—Oct. 3. 1913. No. 45838 A.

Trucking. Editorial on the Editorial on the Editorial State of the Editorial St

handling of goods in railway warehouses, and the use of electric battery trucks in America. 1500 w. Engng—Oct. 10, 1913. No. 45985 A.

Electric Vehicles
The Electric Vehicle from an Insurance Standpoint. Carl H. Clark. Read

Electric Vehichia

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before the Elec. Veh. Assn. Discusses causes of loss and desirable features from an insurance point of view. 2000 w. Horseless Age-Oct. 30, 191z. No. 37202.

Further Progress in the Development of the Electric Vehicle Business in America. Douglas Sutherland Martin. Reviews what has been done and shows the value of co-operation. 2200 w. Rev, Lond—July 11, 1913. Serial, 1st part. No. 43891 A.

Electric Automobiles. W. H. L. Watson and R. J. Mitchell. Considers the possibilities of the employment of electric vehicles in England, showing the suitability and giving results of opera-5500 w. Discussion. Elect'n. Lond-June 20, 1913. No. 43377 A.

The Electric Vehicle. Stephen G. Thompson. A comparison with gasoline vehicles, giving preference to the electric in city service. 1500 w. Car—June, 1913. No. 44811 N. 1500 w. Can Elec Assn

The Electric Vehicle. J. W. Beauchamp. Discusses its limitations and selling points for the English market. 2500 w. Elec Rev, Lond—Aug. 8, 1918. No. 44446 A.

Electric Vehicles from the Central Station Point of View. C. Rummel. Discusses the economy of electric cars of the commercial type. 2000 w. Can Elec Assn —June, 1913. No. 44817 N.

Electric Trucks in Freight House Service. Shows that the use of these trucks in railway and steamship service give greatly increased efficiency. Ills. 2000 w. Ry Age Gaz—Aug. 8, 1913. No. 44260.

Central Station Co-operation in the Electric Vehicle Industry. Douglas Sutherland Martin. Discusses economics obtainable by increasing the off-peak load. 5500 w. Engineering Magazine—Oct., 1913. No. 45542 B.

E. M. F.

Hansom Type Coupé for E. M. F. Chassis. George G. Mercer. Scale drawings and description of a proposed design. 1600 w. Automobile—Nov. 28, No. 37933. 1912.

Details of the New Empire, Model 31. Illustrated description of a five-passenger touring car. 1500 w. Horseless Age-March 26, 1913. No. 40930.

Engine Bearings

Automobile Engine Bearings. E. B. Van Wagner. Brief discussion of their design, material, wear, structure, temperature, cost, etc. 1500 w. S A E Bul—April, 1918. No. 42336 N.

Engine Cooling

See Cooling, under Combustion Motors.

Engine Design

British Designers Aim at Increased Motor Efficiency. Reviews British tendencies as revealed at the Olympia show. Ills. 9500 w. Automobile—Nov. 21, 1912. Serial. 1st part. No. 87721. See also Fuel, under Combustion Mo-

tors.

Engine Efficiencies

Automobile Efficiencies. L. V. Ludy. Presents results of tests at Purdue University. Ills. 4500 w. S A E Bul— May, 1913. No. 42476 N.

The Increase of Efficiency. Eric W. Walford. An illustrated article indicating how power is wasted, why an engine does not always develop its full power, and how very high power can be obtained from engines. 6000 w. Autocar—April 26, 1913. No. 41912 A.

Engines

The Effect of the Relation of Stroke and Bore in Automobile Engines. Wilkinson. A detailed study with conclusions. 4000 w. S A E Bul—Dec., 1912. No. 39802 N.

Location of Gasoline Engine Troubles Made Easy. Gives tables compiled by Victor W. Page, showing in a simple manner the various troubles interfering with efficient operation of all types of four-cycle interval-combustion Ills. 1500 No. 39102. 1500 w. Sci Am-Jan. 11, 1918.

Grapho-Dynamic Experiments on a Four-Cylinder Motor with Variable Stroke (Graphodynamische Untersuchung einer vierzylindrigen Fahrzeugmaschine mit veränderlichem Hub). Tests and description of the Nerreter. motor built by Gill and Aveling, England. Ills. Serial. 1st part. 2800 w. Mo-Serial. 1st part. torwagen—Dec. 20, 1912. No. 39021 D. Church Pneumatic Transmission Unit

Power Plant. Illustrated description of a unit power plant of interest, shown at Chicago. 2000 w. Horseless Age—Feb.

19, 1913. No. 39967.
French Kerosene Motor for Automobiles. Illustrated detailed description of the new Bellem oil motor, which runs on kerosene oil or crude oil, and can be started while the engine is cold. Uses no carburetor nor compressed air. 1500 w. Automobile—March 20, 1918. No. 40750.

Kerosene Engines. John A. Secor. Discusses the supply and demand of gasoline, methods of increasing the supply, alternative fuels, kerosene and gasoline engines, oil-engine types and their commercial efficiency, etc. General discussion. 7500 w. S A E Bul—March, 1913. No. 41260 N.

Exhibitions

Magic Motor. F. R. Hutton and Herbert Chase. A certified test by the Technical Committee of the Automobile Club of America of motor manufactured by Fischer Wagon Co. Discussion. 3500 w. S A E Bul—March, 1913. No. 41262 N. New Waukesha Motors. Drawings and description of two new models of auto-

mobile and truck motors, both of the four-

cylinder type. 1000 w. Horseless Age—April 2, 1913. No. 41052.

Non-Poppet Motors Influence Poppet Types. E. P. Batzell. The advantages claimed by each type are discussed. Ills. 2500 w. Automobile — April 3, 1913. Serial. 1st part. No. 41059.

Possibilities of Six-cylinder, Three-

throw, V Engines. Archibald Sharp. A critical discussion. 1200 w. Autocar—

May 10, 1913. No. 42273 A.

Lightweight Reciprocating Parts for
Motors. Morris R. Machol. Discusses
the problem of reducing the weight of the reciprocating parts of the gasoline engine and the effect. 5000 w. S.A. E. Bul—April, 1913. No. 42337 N.
The Eight-cylinder V Engine. W. G.

Aston. Points out the advantage of the

8-cylinder system. Ills. 2500 w. Auto-car—May 3, 1913. No. 41993 A. Two-Cycle Motors (Zweitaktmotoren). Herr Praetorius. A general review of design, setting forth its favorable and unfavorable points in comparaison with Ills. four-cycle engines. Serial. part. 2500 w. Motorwagen—April 20, 1913. No. 42135 D.

Engines in Sections. An illustrated article for those who do not know how engines work. 1000 w. Auto Jour-June 14, 1913. No. 43126 A.

See also same heading, under Combustion Motors.

Engine Testing

Automobile Engine Testing by Electric Motors. A. G. Chapin. Describes methods of testing and the equipment used. 1600 w. Elec Jour—Nov., 1912. No. 37889.

Test of a Daimler Sleeve Valve Engine. W. Walson, H. Schofield, and J. Wilson. Describes the engine and reports the test and results. Ills. 5000 w. Autocar-Nov. 9, 1912. No. 37629 A.

Motor Testing Plants. J. Edward Schipper. Illustrated description of apparatus for accurate testing purposes. 3000 w. Automobile—March 13, 1913. No. 40627.

Automobile Engine and Carburetor Testing. Herbert Chase. Outlines methods followed, briefly describing apparatus used and results obtained. Ills. 4500 w. S A E Bul—Feb., 1913. No. 40895 N.

Engine Testing at the Northway Plant. J. O. H. Heinze. Explains what this company is doing in the way of testing motors. Ills. 4000 w. April 10, 1913. No. 41182. 4000 w. Automobile —

Factory Methods of Testing Automobile Motors. Stanley Petman. Illustrated description of how the testing stand or block is used. 1500 w. Sci Am. March 29, 1913. No. 40961.

First Report of Motor Testing Division. J. O. Heinze. Gives plans, diagrammatic views of apparatus, and methods pursued in making tests. 2800 w. S A E Bul—March, 1913. No. 41261 N.

English Subsidy
English War Department Subsidy
Finglish For Petrol Scheme, 1912 Specifications for Petrol Lorries. Explains the general conditions governing the grant of subsidy to vehi-cles suitable for war department purposes. Ills. 5000 w. S A E Bul—April, 1913. No. 42334 N.

Equipment

The Equipment of the Car. Refers particularly to foreign practice when the purchaser of a car specifies its final equipment. Reviews details. 3000 w. Auto Jour—June 14, 1913. No. 43125 A.

Exhaust Gas Analysis. Engineers discuss the value of analyzing exhaust gases to determine engine and carbureter efficiency. 8500 w. Automobile—Feb. 6, 1913. Serial, 1st part. No. 39678 C.

Exhibitions

International Motor Exhibition Olympia. Illustrated description of interesting exhibits showing the general tendency of modern motor construction. Plate. 5000 w. Engng—Nov. 15, 1912. No. 87823 A.

Motor Car Show at Olympia. General review, with illustrated description of exhibits. 2500 w. Engr, Lond—Nov. 8, 1912. Serial. 1st part. No. 37648 A. The French Motor Show. Notes and

criticisms on the exhibits in Paris. 8000 Autocar-Dec. 14, 1912. No. 38384 A.

The Electrical Exhibits at the Olympia Motor Car Exhibition. Charles J. Webb. Illustrates and describes electrical specialties in connection with automobiles. Magnetos, sparking plugs and other ignition accessories, electric lamps, electric horns, etc. 1600 w. Elec Rev, Lond—Nov. 22, 1912. Serial. 1st part. No. 38021 A.

Automobile America at the Shows. Illustrates and briefly describes the exhibits at Madison Sq. Garden and Grand Central Palace, New York, in January. 5500 w. Automobile—Jan. 16, 1913. No. 39210.

Exhibitions AUTOMOBILES Franklin

The Progress in Automobilism in 1912 (Les Progrès de l'Automobilisme en 1912). F. Drouin. A study of improved motor design as exhibited in the Paris Salon. Ills. Serial. 1st part. 3700 w. Genie Civil—Jan. 4, 1913. No. 39089 D.

The New York Motor Show. A critical review by an English automobile engineer resident in America. Ills. 3500 w. Autocar—Feb. 1, 1913. No. 39767 A.

Mechanical Features of Pleasure Cars at the National Shows. A. C. Woodbury. Illustrated review of features of interest, and also a table of statistics. 4000 w. Horseless Age — Jan. 29, 1913. No. 39572 C.

Truck Springs, Suspensions, and Details at the Shows. Asher Golden. Drawings and descriptions showing tendencies in design. 3000 w. Horseless Age—Jan. 29, 1913. No. 39574 C.

Business Cars at Olympia. Calls attention to points of interest at the Industrial Motor Vehicle Show. Ills. 3000 w. Autocar—July 26, 1913. No. 44160 A.

Commercial Motor Vehicle Exhibition. Illustrates and describes the exhibits at Olympia. 5000 w. Engr, Lond—July 25, 1913. No. 44189 A.

The Commercial Motor Vehicle Exhibition. An account of the exhibition at Olympia, illustrating and describing the interesting exhibits. 7500 w. Engag—July 25, 1913. Serial, 1st part. No. 44182 A.

See also Commercial Vehicles, and Motor Plows, under Automobiles.

Fint

Manufacturing Fiat Motor Cars. Ethan Viall. Illustrates and describes methods of work in the American branch of this Italian factory. 2000 w. Am Mach—Nov. 21, 1912. No. 37662.

Four-cylinder Model Added to Fiat Line. Illustrates and describes models for the next season. 2200 w. Automobile—Dec. 5, 1912. No. 38085.

Fiat Rear Axle and Torque Tube a Unit. Illustrates and describes factory processes in construction and assembly of combined rear axle and torque tube stampings. 1500 w. Automobile—Dec. 12, 1912. No. 38171.

Fire Apparatus

The Motor Fire Apparatus Situation Analyzed. Albert L. Clough. Discusses comparative costs of horse and motor maintenance, advantages, etc. 2000 w. Horseless Age — March 26, 1913. No. 40933.

American Fire Trucks (Amerikanische Feuerwehrautomobile). Herr Hüpeden.

Illustrated descriptions of some leading designs. 5000 w. Zeit d Mitt Motorwagen Ver — March 15, 1913. No. 41451 D.

German Automobile Fire Apparatus (Deutsche Feuerwehrautomobile). Erich Blumenthal. Illustrated description of recently built fire engines and ladder trucks. 3000 w. Auto Rundschau—July 30, 1913. No. 44660 D.

Motor Fire Apparatus. H. W. Perry. Presents facts showing how rapidly motor apparatus is replacing horses. Ills. 2500 w. Munic Engng—Sept., 1913. No. 45207 C.

New Bedford's Auto Apparatus. Walter H. York. Illustrates and describes apparatus built by the New Bedford Fire Department. 1800 w. Munic Jour—Sept. 11, 1913. No. 45121.

Care of Motor Driven Fire Apparatus.

Care of Motor Driven Fire Apparatus. J. M. Taylor. First prize paper. Illustrated description of the maintenance of motor apparatus, both electric and gasoline driven. 3000 w. Munic Engag—Oct., 1913. No. 46143 C.

Care of Motor Fire Apparatus. F. H. Bemis. 2nd prize paper. Suggestions and directions for keeping apparatus in good condition. 1500 w. Munic Engng—Oct., 1913. No. 46147 C.

See same heading, under CIVIL ENGINEERING, Municipal.

Fire Trucks

The New Adler Motor Fire Engine (Die neue Motorspritze der Adlerwerke). W. Schwerdtfeger. Descriptions of hose ladder, engine and firemen trucks built by the Adler Company. Ills. 4000 w. Motorwagen — Jan. 20, 1913. No. 40049 D.

F. N

The 12-14 h. p. F. N. Illustrated description of this Belgian car and its ingenious lubrication system with reserve supplies of oil. 2000 w. Autocar—May 3, 1913. No. 41994 A.

Ford

A Limousine Body Designed for the Ford. George J. Mercer. Brief illustrated description of a special body that can be fitted without chassis alteration. 1500 w. Automobile—July 17, 1913. No. 43827.

See Service System, under Automobiles.

Franklin

Franklin Series Two Reveals a New Little Six. Illustrated description of the Model M. "Little Six" 30 H. P. touring car, and other models of this Syracuse, N. Y., company. 2200 w. Horseless Age—Nov. 6, 1912. No. 37360.

Fuels

AUTOMOBILES

Fuels

Fuels

Gasoline and Its Future. N. B. Pope. Discusses supply and demand, the need of standardization, other fuels, 3000 w. S A E Bul—Dec., 1912. No. 39306 N.

Low-Grade Fuel for Motor Trucks. N. B. Pope. Read before the Soc. of Engrs. Discusses the need of educating the public in the use of low-grade substitutes for gasoline. Jan. 23, 1913. 2500 w. Antomobile-No. 39493

Will the Automobile Be Driven by Kerosene? H. A. Morris. Discusses the problem of the decreasing supply of gasoline and the increasing number of internal combustion engines. Ills. Sci Am-Jan. 11, 1913. No. 89104.

Low-Grade Fuel for Motor Trucks. N. B. Pope. Discusses available fuels and their value, carburetion, combustion, etc. 2200 w No. 39945 N. 2200 w. S A E Bul-Jan., 1913.

Motor Fuels. W. R. Ormandy. Discusses petrol, paraffin, coal tar products of the benzole class, and alcohol, giving facts and suggestions. 7000 w. Autocar
—March 1, 1913. No. 40461 A.

Motor Spirit to Solve Fuel Problem for the Passenger Car. Information concerning this substitute for gasoline as a fuel. 2000 w. Automobile — Feb. 27, 1913. No. 40233.

Synthetic Petrol. A discussion of the fuel problem. 2500 w. Auto Jour-March 8, 1913. Serial. 1st part. No. 40700 A.

Gasoline and Its Future. N. B. Pope. The consumption and production and probabilty of shortage are discussed; fuel standardization, substitutes, etc. 3300 w. S A E Bul-Feb., 1913. 40393 N.

Gasoline and Its Substitutes. cusses the probability of substituting a less expensive fuel for gasoline, methods of producing gasoline, etc. 2000 w. Sci Am—March 22, 1913. No. 40748.

The Waning Supply of Gasoline. John A. Secor. Extracts from an address before the Soc. of Auto. Engrs., Indianapo-

lis. 2500 w. Sci Am Sup — April 26, 1913. No. 41618.

The Physical Properties of Gasoline and Kerosene. Based on an article by L. Berger. Considers the properties of the two fuels. 2000 w. Horseless Age—April 23, 1913. No. 41612.

The Use of Gasoline-Kerosene Mixtures. Albert L. Clough. Suggestions for the use of this mixture. 1200 w. Horseless Age—April 23, 1913. No. 41610.

Motor Fuels. W. R. Ormandy. Information is given of the writer's experience with benzole and mixtures, and an

account of experimental work to be undertaken. 4000 w. Autocar—March 22, 1913. No. 40997 A. The Del Monte Process. W. R. Or-

mandy. Information concerning this process for furnishing an economical motor-spirit; a smokeless fuel; and the claims made. 2500 w. Autocar—April 12, 1913. No. 41373 A.

Liquid Motor Fuels. A. E. Potter. Remarks on alcohol and the hydrocarbons. 2000 w. S A E Bul-April, 1913. No. 42338 N.

Motor Fuels. Harry Tipper. A discussion of crude oils, kerosene, gasoline, etc., with general discussion. 4500 w. S A E Bul—April, 1913. No. 42339 N. Notes on Paraffin. Eric W. Walford.

Illustrates and describes details of the White and Poppe system, and of the Halliday paraffin carbureter. 2500 Autocar—April 19, 1913. No. 41747 A. 2500 w.

An Examination of the Characteristic Flow of Fuel Through a Small Orifice. R. M. Anderson. Brief account of experiments to determine the relation of flow to head. 800 w. Soc of Auto Engrs— June, 1913. No. 43298 N.

Fuel for Combustion Motors, Its Occur-Thermodynamic and Changes (Brennstoffe für Explosionsmotoren, ihr Vorkommen und ihr thermodynamisches Verhalten). August Bauschlicher. A review covering the known oil-fields, the distillation and sale of gasoline, the combustible power of gasoline, etc. 8000 w. Motorwagen — April 30, 1913. 48026 D.

Observations on the Benzol Question, with Particular Reference to Carburetors (Betrachtungen zur Benzolfrage mit besonderer Berücksichtigung der Spritzvergaser). Karl Büchner. A chemical study of this oil and the type of carburetor most suitable for its use. Ills. Serial. 1st part. 10000 w. Zeit des Mitt Motor Ver —Apr. 30, 1918. No. 43030 D.

The Fuel Problem for Automobiles and Small Agricultural and Industrial Motors (Le problème de carburant pour les moteurs d'automobiles et les petits moteurs agricoles ou industriels). A. Grebel. A study by charts showing the increasing demand for fuel and the constant decrease in proportionate supply. Serial. 1st part. 4800 w. Genie Civil—June 14, 1913. No. 43090 D.

Fuel for Motor Vehicles. Abstract of paper on "Petrol Substitutes," read at the Imperial Motor Transport Conference. Sir Boverton Redwood and Vivian B. Lewes. Discusses the likely sources from which a substitute for petrol might be derived. 2500 w. Col Guard—July 25, 1913. No. 44179 A.

Fuel Tanks

AUTOMOBILES

Grant

Sources of Motor Fuel. Reviews the technical side of the problem with reference to the papers read at the Imperial Motor Transport Conference. 8000 w. Engng—July 25, 1913. No. 44183 A. Benzol and Its Field in the Driving of

Benzol and Its Field in the Driving of Power Wagons (Das Benzol und seine Verwendung für den Betrieb von Kraftfahrzeugen). Ernst Jaenichen. The characteristics of this fuel and a suitable type of carburetor. Ills. 3600 w. Auto Rundschau—June 30, 1913. No. 44659 D.

Solving the Fuel Problem for the Motor Truck. Harold Whiting Slauson. Discusses the characteristics of kerosene as a fuel for internal combustion engines. Ills. 3500 w. Mach, N Y—Oct., 1913. No. 45609 C.

The Fuel Question. J. S. Critchley. Condensed presidential address before the Inst. of Auto, Engrs., London. A discussion of the motor fuel problem. 6000 w. Horseless Age—Oct. 22, 1913. Serial, 1st part. No. 46193.

See also Carburetors, Economy, and Engines, under Automobiles.

Fuel Tanks

Rear Fuel Tanks and Their Supporting Means. Illustrates and describes new ideas in tank supports shown at the Chicago exhibition. 1700 w. Horseless Age —Feb. 5, 1913. No. 39730.

Garages

Concrete Service Depot for Automobiles. Describes details of a building in Boston. Ills. 2000 w. Eng Rec-Nov. 16, 1912. No. 37583.

Electricity for Garages. Information and data showing the durability of the battery charging load, and describing details. Ills. 4000 w. Elec Rev & W Elect'n—May 8, 1913. No. 41871.

The Bangor Motor Co.'s New Garage,

The Bangor Motor Co.'s New Garage, Bangor, Me. Illustrated detailed description. 1200 w. Horseless Age—May 7, 1913. No. 41984 C.

The Dupont Garage, Washington, D. C. Illustrated detailed description of a garage designed for high-class service. 4000 w. Horseless Age—May 7, 1913. No. 41981 C.

Georgian Service Garage, Atlanta, Ga. Illustrated detailed description of the building and service. 2000 w. Horseless Age—May 7, 1913. No. 41983 C.

The Mulkern Garage, Milwaukee, Wis.

The Mulkern Garage, Milwaukee, Wis. Illustrated description of the building, its arrangement and management. 3500 w. Horseless Age—May 7, 1913. No. 41986 C.

The Nickerson Garage, Portland, Me. Illustrated description of one of the largest and best garages in New England. 2500 w. Horseless Age—May 7, 1913. No. 41985 C.

Portable Garage Is a Problem Solver. Sydney Oxberry. Illustrated description of garages that can be easily erected by the owner. 3000 w. Automobile—June 19, 1913. No. 42966.

Garage Economy Depends on Its Lay-

Garage Economy Depends on Its Layout. Calls attention to the effect of arrangement on the convenience and celerity in handling cars. 1500 w. Automobile—Sept. 11, 1913. No. 45107.

Gasoline Pumps

Sidewalk Gasoline Pumps Draw Transient Trade. Illustrates and describes types of pumps for curb selling of gasoline. 2500 w. Automobile—Oct. 9, 1913. No. 45790.

Gear Changing

Gear Changing and the Clutch Brake. E. P. Batzell. Claims that silent changing is rendered easier by clutch brake which permits control of gear before meshing. 2500 w. Automobile—March 27, 1913. No. 40884.

Gear Ratios

How to Choose in Case of an Option on Gear Ratio. Albert L. Clough. Suggestions helpful in selecting the gear ratio of the final drive. 1200 w. Horseless Age—April 2, 1913. No. 41051.

Gears

The Desirable Number of Gear Changes. P. S. Tice. Explains why a change gear is necessary and the limitations of the internal combustion engine, showing how to determine the desirable number of gear changes for any car. 3500 w. S A E Bul—July, 1913. No. 44331 N.

History of the Double Direct Drive. A. C. Woodbury. Illustrated review of cars equipped with direct drives. 1500 w. Horseless Age—Aug. 20, 1913. No. 44533.

See same heading under Machine Elements and Design.

Germany

Automobile Statistics for the German Empire (Automobil-Statistik des Deutschen Reiches). Diagrams showing the increase in the number of cars in use since 1907 in the several provinces. Serial. 1st part. 2000 w. Motorwagen—May 31, 1913. No. 43029 D.

Globe

The 8-H.P. Globe Car. Illustrated description of a modern light car with an ingenious combination of belt and chain drive. 1500 w. Auto Jour — March 8, 1913. No. 40699 A.

Grant

New Grant Car a Real Miniature Automobile. Brief illustrated description of this new small car, having 4 cylinder motor, cone clutch, and regular shaft drive.

Hampton

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La Buire

1200 w. Automobile-June 27, 1913. No. 43242.

Hampton

The 11.9-H.P. Hampton Car. Illustrated description of a new British-built light car. 1000 w. Auto Jour-Jan. 11, 1913. No. 39244 A.

Havers

Havers Adds a Big Six. Illustrated detailed description of a new model. 2500 w. Automobile—Dec. 26, 1912. No. 38582.

Head Lights

Autocar Head Lights. D. H. Ogley. A series of three elementary monographs dealing with the theory and practice of acetylene and electric head lamp design. 2000 w. Autocar—Nov. 28, 1912. Serial. 1st part. No. 38019 A.

Horsepower
The Measurement of Horsepower. W. Morgan and E. B. Wood. Discusses methods of measurement and gives a report of experiments to determine reliability and limitations. Ills. 3000 w. S A E Bul—July, 1913. No. 44329 N.

Hotchkiss

The 20-30-H.P. Hotchkiss Car. trated description. 2000 w. Auto Jour-March 15, 1913. No. 40803 A.

Howard

New Howard Car. Illustrated description of the Howard Six, a new six-cylinder car. 2000 w. Horseless Age—March 5, 1913. No. 40362.

Hupmobile

The 15-18 h. p. Hupmobile. Describes the interesting unit construction of engine, clutch, pit, and gear box, and other features. Ills. 1200 w. Autocar—June 14, 1913. No. 43127 A.

Hydraulic Drive

The Hele-Shaw Hydraulic Transmission for Motor Cars (Motorwagen mit hydraulischer kraftübertragung System Hele Shaw). Wittmaack. Herr Describes the main features of this system for replacing clutch, gear-box and differential in motor vehicles. 1700 w. Zeit des Mitt Motor Vereins-Dec. 30, 1912. No. 39028 D.

See also Gears, under Machine Elements and Design.

Hydraulic Transmission

A New Variable Speed Hydraulic Power Transmission Device Applied to a Motor Truck. Illustrated description of the gear and its application. 2000 w. Eng News—Oct. 31, 1912. No. 37208. See same heading under Hydraulic

Machinery, and Gears under Machine Ele-ments and Design.

Ignition

How the Magneto Works. Eric W. Walford. An illustrated colloquial explanation for beginners. 5000 w. Autocar—Nov. 2. 1912. Serial. 1st part. No. 37387 A.

The Magneto and the Spark Coil. Joseph B. Baker. Explains how the magneto and spark coil work in igniting the mixture in an internal combustion engine. Ills. 2500 w. Power—Nov. 12, Power-Nov. 12, 1912. No. 37875.

Automatic Spark Advance. S. M. Udale. Discusses spark advance and 800 w. problems related. Horseless Age-Dec. 11, 1912. No. 38170.

Battery versus Magneto Ignition Systems. Benjamin Bailey. Considers the constant voltage ignition possible with a good battery system to be superior to magneto ignition. Ills. 4000 w. Automobile—Aug. 28, 1913. No. 44799.

Automatic Control of Firing Time. Albert L. Clough. Discusses the effect of spark governors on engine behavior and fuel economy. 2000 w. Horseless Age—Aug. 20, 1918. No. 44534.

See same heading, under Combustion Motors.

Imperial

Three Imperial Models on the Market. Illustrated description of Model 44, as the general specifications apply to all. 2500 w. Horseless Age-Nov. 20, 1912. No. 37768.

Inspection

General Inspection Methods. E. F. Roberts. Read before the Soc. of Auto. Engrs. Discusses details of thorough inspection. 6000 w. Horseless Age—June 25, 1913. No. 43192.

General Inspection Methods. Roberts. Discusses its importance with special reference to automobile manufacture. 5000 w. S A E Bul—July, 1913. No. 44330 N.

The Automobile Industry in Italy (L'industria dell' automobile in Italia) Ranieri Pini. A review of exports and imports since 1907, showing increase in number and value. 1200 w. Industria -Aug. 24, 1913. No. 45366 D.

Keeton

Some Features of the Keeton Six "48." Illustrates and describes features of this six-cylinder car. 2500 w. Horseless Age—April 30, 1913. No. 41827.

Kisselkar

Kisselkar Models for 1913. Illustrations and brief description of four cylinder chassis models of 30, 40, and 50 h. p., and a six cylinder chassis of 60 h. p. 800 w. Horseless Age-Oct. 80, 1912. No. 87201.

The 20 h. p. La Buire. Illustrated de-

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Matorials

tailed description of an interesting French car. 1500 w. Autocar—April 19, 1918. No. 41749 A.

Lighting

Lighting

Some Points in Electric Lighting for Automobiles. C. F. Kettering. Considers the method of control, the candle power, the tungsten filament, etc. 2500 w. S A E Bul—Oct., 1912. No. 37175 N.
Ward Leonard Electric Lighting System. Illustrated description of this au-

tomatic dynamo lighting system. 1600 w. Automobile—Dec. 12, 1912. No. 38173. Electric Light at Low Cost. A. C.

Woodbury. Recommends and describes details of a multiple series connection of dry cells for cars when used but seldom 2500 w. Horseless Ageat night. Jan. 1, 1913. No. 88789.

Electric Cranking and Lighting. views the requirements of a complete electric system, with introductory to a discussion of each system. Ills. Automobile—Jan. 16, 1913. 1st part. No. 39211.

The Rushmore Electric Car Lighting System. Illustrated detailed description. 1500 w. · Horseless Age-Jan. 1, 1913.

No. 38790.

Electric Lighting of Gasoline Car. Illustrates and describes the two methods of control in use, and other details. 3000 Automobile — Feb. 6, 1913. 39679 C.

Electric Lighting System at the Recent Show. A. C. Woodbury. Illustrates and describes the different electric systems for

describes the different electric systems for lighting automobiles. 3000 w. Horseless Age—Jan. 29, 1913. No. 39571 C.
Recent Ideas in Magneto Electric Lighting Devices (Neuere Vorschläge für magnetelektrische Zündmaschine). W. Wolf. A review of late designs. Ills. 1st part. 2000 w. Motorwagen—March 10, 1913. No. 41444 D.
The E. B. C. Dynamo Lighting Set. Illustrated detailed description. 1200 w.

Illustrated detailed description. 1200 w.

Auto Jour—July 26, 1913. No. 44159 A. Electric Automobile Lighting (Die elektrische Automobilbeleuchtung). sef Löwy. Principles of dynamo construction, wiring systems, lamps and reflectors. Ills. 4000 w. Elek u Masch
—July 27, 1913. No. 44693 D.

See also Head Lights, Electric Systems and Motorcycles, under Automobiles and

Motorcucles.

Little

The "Little" Car. Illustrated detailed description of an American low-priced car of unusual excellence. 1500 w. Auto Jour-Jan. 25, 1913. No. 39769 A.

Locomobile

Locomobile Little Six Introduced for

1913. Illustrates and describes refinements introduced in the latest models. 3500 w. Automobile-Dec. 12, 1912. No. 38172.

London

The London Motor Omnibus Service. T. B. Browne. Read before the Soc. of Auto. Engrs. Describes types of vehicles and gives latest regulations as regards weight limits, and other information. Ills. 3000 w. Horseless Age—June 11, 1913. No. 42811.

Lozier

The Lozier Light-Six. Illustrated detailed Description of Type 77. 2000 w. Automobile—April 3, 1913. No. 41060. The Lozier Light "Six." Illustrates

and describes the new features introduced in the latest model. 2200 w. Horseless Age—May 21, 1913. No. 42392.

Lubrication

A Chapter on Friction and Lubrication (Ein Capitel über Reibung und Schmiermittel). Kurt Bilau. Studies on the coefficient of friction in bearings, showing loss of available power. 3000 w. Zeit d Mitt Motorwagen Ver—March 15, 1913. No. 41452 D.

Gearbox Lubrication. Albert Clough. Suggestions for the proper lubrication of gear sets. 1500 w. Horseless Age—July 2, 1913. No. 43439.

See same heading, under Combustion Motors.

Magneto

See Ignition, under Automobiles.

Mail Services

Automobile Mail Services. paper by G. Hamilton Grapes, read in Reviews the application of motor wagons for mail haulage in different countries, with observations on the most suitable type of vehicle for the purpose. 2000 w. Horseless Age—Aug. 20, 1913. No. 44532.

Materials

Materials for Motor-Bus Construction. Gives specifications to which the Daimler Company work. Engng—Jan. 17, 1913. Ills. No. 39481 A

Fourth Report of Iron and Steel Division. Revised notes and instructions referring to materials specified. 7000 w. S A E Bul-May, 1913. No. 42469 N.

The Manufacture of Motor Car Parts in America. James McIntosh. Explains how special methods and even skill in special work make possible the cheap cars built, and not poor materials. 3300 w Engr, Lond—May 9, 1913. No. 42294 A.

Construction Material of the English Daimler Omnibus (Baustoffe der eng-Daimler-Omnibusse). lischen

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graphic studies of the metals entering into the construction. Ills. 2600 w. Auto Rund—Sept. 80, 1918. No. 46058 D.

Maxwell

The Maxwell Twenty-five. Illustrated description of this four cylinder 25 h. p. touring car. 2000 w. Horseless Age—May 28, 1913. No. 42629.

Maxwell 85-4 Touring Car. Illustrated detailed description of this new model. 700 w. Horseless Age—Aug. 6, 1918. No. 44230.

Michigan

Four Michigan Models for 1913. Illustrates and describes interesting features of new models. 2200 w. Horsetures of new models. 2200 w. less Age-Dec. 4, 1912. No. 38053.

Military

The Program for the 1918 Endurance Tests for Military Trucks (Le Programme de l'Epreuve d'Endurance des Camions Militaires pour 1913). D. Duaner. An outline of the conditions to be covered in this test. 4500 w. Genie Civil—Nov. 2, 1912. No. 87521 D.

Endurance Tests of Military Trucks of the 1913 Models from October 2 to 30, 1912. (Prüfungsfahrt der Armeelastzüge neuer Art, Typ 1913, vom 2. bis 30. Ok-tober, 1912). Herr Listemann. Describes the various entrants, and results of test. 5000 w. Motorwagen-Nov. 20, Ills. No. 38441 D. 1912.

Endurance Test of the New Military Trucks (Die Prüfungsfahrt der neuen Armeelastzüge). Describes some of the trucks and the conditions of the test from the 2nd to the 30th of October. Ills. 2700 w. Zeit d Mitt Motor Vereins—Dec. 15, 1912. No. 39020 D. Dec. 15, 1912.

Relief Motor Trucks for Austrian Army Service (Die Subventions-Motorlastwagen der österreichischen Heeresverwaltung). A. Heller. Detailed description of the design of these heavy-duty 3800 w. Zeit des Ver Ills. trucks. deutscher Ing-Dec. 28, 1912. 89043 D.

Trials of Military Tractors with Four-Wheel Drive (Concours de tracteurs militaires à quatre roues motrices). D. Duaner. The trucks entering the competition, their application of the four-wheel drive, test conditions and results. Ills. 5000 w. Genie Civil—April 12, 1913. No. 41528 D.

A Practice Run of the Bavarian Automobile Troop (Eine Uebung der bayerischen Kraftfahrtruppen). Fritz Listemann. Details of a military test of ten army trucks and four passenger cars on a seven-day run, with comparative results of fuel and oil consumed, and other details. Ills. 8000 w. Motorwagen—Apr. 30, 1913. No. 48025 D.

Standardization of Army Motor Trucks in Germany (Einbürgerung des Last-kraftwagenbetriebes im Deutschen Reiche). Specifications and approved designs as adopted by the German War Department. Ills. Serial. 1st part. 6000 w. Motorwagen—May 10, 1913. No. 43027 D.

70 Trucks Compete in French Army Trials. Illustrated account of the annual competitive trials. 2500 w. Auto-

mobile—July 24, 1913. No. 43866.
Automobile Troops in Field Action (Kraftfahrtruppen im Felde). An outline of the composing elements of an automobile troop, its government and scope. Ills. 6300 w. Auto Rundschau—Aug. 15, 1913. No. 44662 D.

Three-Ton War Office Subsidy Chassis. Illustrated description of a commercial chassis designed to meet the requirements

of the War Office subsidy scheme. 800
w. Engng—Aug. 22, 1913. No. 44918 A.
Military Endurance Tests of Heavy
Trucks (L'épreuve d'endurance militaire
des véhicules de poids lourd). D. Duaner.
List of entries and result of tests during the period July 1 to Aug. 12. Ills. Serial, 1st part. 3500 w. Genie Civil—Aug. 23, 1913. No. 45354 D.

Motorizing Mars in France. Report of tests showing the superiority of motor trucks to horses under conditions of war. 2000 w. Automobile—Oct. 9, 1913. No. 45789.

Morris-Oxford

The Morris-Oxford Light Car. Illustrated description of a well-designed small car, with four cylinders, unit system, multiple disc clutch and worm drive. 1500 w. Autocar-April 19, 1913. No. 41748 A.

Motor Cycles

Motor Cycles at Olympia. Illustrates and describes interesting details. 3500

w. Auto Jour—Dec. 7, 1912. No. 38230 A.
The Genealogy of the Motorcycle. J.
O'Connor. Reviews the development from the steam velocipede, 1868, to the standard machine of 1913. Ills. 2000 w. Sci Am-July 5, 1913. No. 43429.

Electric versus Gas Lighting for otorcycles. L. C. Porter. Reports Motorcycles. tests made by the author, showing the general advantages of electric lighting and giving results of road tests and laboratory tests. Ills. 3000 w. Gen Elec Rev-Aug., 1913. No. 44090 C.

Motor Plows

The Lanz Agricultural Motor, Köszegi-Seck System (Landbau-Motor Lanz System Köszegi-Seck). Introduces new type

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of motor plow, acting both as plow and harrow. Ills. 2000 w. Zeit des Mitt Motorwagen Ver-Nov. 30, 1912. 38444 D.

The Third Motor Plow Exhibition at Winnipeg (Die dritte Motorpflugkonkurrenz in Winnipeg). K. v. Meyenburg. Discusses the several agricultural motors on exhibit. 2800 w. Motorwagen—Nov. 20, 1912. No. 38442 D.

Problems in Experimental Motor-Plow Mechanics (Probleme einer experimentellen Motorpflugmechanik). R. Bernstein. Experiments on driving power, soil resistance, etc. Ills. Serial. 1st part. 7500 w. Motorwagen — March 31, 1913. No. 41447 D.

Recent Motor Plows (Neuere motor-pflüge). K. Praetorius. Review of some of the latest inventions in Europe. Ills. Serial. 1st part. 3200 w. Zeit d mitt Motorwagen Ver-March 1, 1913. No.

41450 D.

Discussion on Motor Plows in the Automobile Industries (Diskussion über Motorpflüge in der Automobiltechnischen Gesellschaft). Discussion on the paper by Prof. Martiny by the engineers of leading automobile companies of Germany. 15000 w. Motorwagen-Sept. 10, 1913. No. 46052 D.

Motors

Light Motors Show Efficiency and Power. E. H. Delling. Considers that high speed motors developed in recent years show low weight per horsepower. 3000 w. Automobile—Oct. 16, 1913. No. 45901.

Motor Truck Design
Tendency of Foreign Motor Truck Design. L. C. Freeman. Read before the Soc. of Auto. Engrs., N. Y. Reviews some details of design, commenting on their advantages and disadvantages. 2000 w. Horseless Age—Feb. 12, 1913. No. 39855. Motor Trucks

The Building of Hewitt Motor Trucks. Robert Mawson. Illustrated description of special tools that effect a saving of time on crank case machinery. 1800 w. Am Mach-Nov. 7, 1912. No. 87297.

Motor Transportation as an Aid to Industrial Economy. Rollin W. Hutchinson, Jr. Third and concluding article of a study. Gives comprehensive data of actual haulage costs. Ills. 3000 w. Engineering Magazine, March, 1913. No. 40082 B.

Efficiency of Motor Trucks with Trail-Morgan Cilley. Reports a series of tests made under various conditions at Troy, Ohio. Ills. 4000 w. Eng Rec—Feb. 1, 1913. No. 39645

Tests of Efficiency of Motor Trucks

with Trailers. Description and summary of tests made by Richard T. Dana. 4000 Engng & Con—Feb. 19, 1913. 39932.

Motor Sizes for Motor Trucks. Cornelius T. Myers. Discusses items in motor size selection, tractive factors in America and in France, etc. 3000 w. S.A. E Bul-Jan., 1912. No. 39944 N.

Some Features of the 1913 Motor Truck Show in New York City. Illustrated description of interesting exhibits. 2000 w. Eng News-Feb. 20, 1913. No. 39975.

Studebaker 3-Ton Truck. Illustrates and describes details. 1100 w. Horseless Age—Feb. 5, 1913. No. 39732.

Economics of Motor Trucking. Cliner Partial

ton Brettell. Compares gasoline and electric motor trucks with those drawn by horses, as to speed, convenience, reliability, and cost of operation. Ills. 4500 w. Sch of Mines Qr — April, 1913. No. 41696 D

End Dump Bodies for Commercial Vehicles. Ross Babcock. Illustrates and de-

nicies. Ross Badcock. Hustrates and describes types of dumping bodies. 1800 w. Sci Am—April 26, 1913. No. 41592.

Present Status of Motor Truck Practice with Special Reference to H. Büssing-Braunschweig Designs (Der heutige Stand des Lastkraftfahrwesens unter besonderer Berücksichtigung der Kronstruktionen von H. Rüssing-Regunvon H. Büssing-Braunstruktionen schweig). Dr. Hofmann. Testing details of these trucks for heavy service. Ills. 4000 w. Zeit d mitt Motorwagen Ver—Feb. 28, 1913. No. 41448 D.

Systems Transmission for Trucks. A. C. Woodbury. A discussion of the relative advantages and disadvan-

tages of different change gear systems and of rear drives. 6000 w. Horseless Age—July 16, 1913. No. 43749.

Increasing the Efficiency of Trucks. Hans W. Weysz. Improvements in operation which reduce the ton-mile cost. 2500 w. Automobile—July 10, 1913. No. 43605

43605.

Motor Trucks in Municipal Contract-H. W. Perry. Illustrates and describes trucks used on the Catskill Aqueduct, and for other kinds of municipal work. 2000 w. Munic Engrg—July, 1913. No. 44037 C.

N. Y. Edison Co.'s Truck Operating System. Shows how all important information relating to operation can be recorded by use of a few forms. 1200 w. Automobile-July 17, 1913. Serial, 1st part. No. 43828.

Motor Trucks with Four-Wheel Drive (Motorwagen mit Vierräderantrieb). A. Heller. Advantages for heavy loads and details of engine connections. Ills. 2700

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Nazzaro

w. Zeit des Ver deutscher Ing-June 7, 1913. No. 43525 D.

Motor Trucks in Municipal Contracting. H. W. Perry. Considers cost per ton-mile, the only logical basis on which to compare the motor with the horse. Ills. 1500 w. Munic Engng—Aug., 1913. No. 44392 C.

Motor Truck Adaptability and Its Relation to Operating Efficiency. P. D. Wagoner. Gives the specification of a Mercedes gasolene truck and indicates what it is capable of doing. 2500 w. Gen Elec Rev—Aug., 1913. No. 44088 C.

Motorized Hauling Service. Wellington Walker. The requirements of successful truck operation are discussed. 1200 w. Munic Engng—Aug., 1913. No. 44393 C.

Developments in Design of Commercial Motor Vehicles. Editorial review of the recent exhibition at Olympia. Ills. 4500 w. Engng—Aug. 1, 1913. No. 44320 A.

The Motor Truck in Contracting and Construction Work. Rollin W. Hutchinson, Jr. First of a series of articles. Gives cost data of aqueduct, bridge and subway jobs. Ills. 6000 w. Engineering Magazine—Sept., 1913. No. 44763 B.

The Motor Truck in Contracting and Construction Work. Rollin W. Hutchinson, Jr. This second article of a serial presents advantages of motor truck service in municipal work chiefly. Ills. 3800 w. Engineering Magazine—Oct., 1913. No. 45545 B.

The Motor Truck in Contracting and Construction Work. Rollin W. Hutchinson, Jr. This third part of a series discusses contractor's objections. Ills. 4000 w. Engineering Magazine—Nov., 1913. No. 46307 B.

Across Alaska by Motor Truck. An account of a remarkable expedition. 1500 w. Eng & Min Jour—Oct. 11, 1913. No. 45807.

Availability of Motor Trucks for Mines. Information on the performance of motor trucks in the mining industry. 4000 w. Eng & Min Jour—Oct. 18, 1913. No. 45937.

4½-Ton Petrol Motor Wagon. Illustrated description of a vehicle exhibited at London built to comply with the requirements of the War Office. 700 w. Engr, Lond—Sept. 26, 1913. No. 45745 A.

Screw Threads on Motor Lorries. Memorandum issued by the Sec. of War Office regarding the screw threads which should be used on motor-lorries constructed to meet the requirements of the War Dept. subsidy scheme. 1400 w. Mech Engr—Sept. 26, 1913. No. 45734 A.

See also Commercial Vehicles, Electric Vehicles, Fire Trucks, Fuels, Tractors and Hydraulic Transmission, under Automobiles.

Motor Vehicles

Motor Transportation as an Aid to Industrial Economy. Rollin W. Hutchinson. Outlines the betterment of transportation and distribution made possible by motor vehicles, and the enormous possible effect on national economy from their use. Ills. 5000 w.—Engineering Magazine—Jan., 1913. No. 38679 B.

Gimbel Brothers' System of Delivery. An account of how 95 freight automobiles are efficiently handled. 3000 w. Automobile—Dec. 5, 1912. No. 38084.

Motor Transportation as an Aid to Industrial Economy. Rollin W. Hutchinson, Jr. This second article of a series gives comparative data of actual haulage costs, showing the saving effected. Ills. 5000 w. Engineering Magazine—Feb., 1913. No. 39429 B.

Storage Battery Industrial Trucks. Adrian D. Stevenson. Explains the usefulness of such vehicles, illustrating types. 1000 w. Elec Wld—Jan. 11, 1913. No. 38999.

The Auto-Truck for Coal Delivery. Frank C. Perkins. Illustrates types and gives results of service. 1200 w. Sci Am Sup—Jan. 11, 1913. No. 39107.

Am Sup—Jan. 11, 1913. No. 39107.

Heavy Motor Vehicles. George W. Watson and D. S. Kennedy. Deals with goods carrying vehicles having a load capacity of three tons and upwards. Considers both steam and petrol vehicles. Ills. 15000 w. Inst of Auto Engra—March, 1913. No. 43297 N.

See also Commercial Vehicles, under Automobiles.

Mud Guarda

Second Mud-Guard Competition of the Seine-Oise Automobile Club (IIe concours de pare-boue de l'Automobile-Club de Seine-et-Oise). E. Bret. Description of entries and results of this second open competition for the purpose of obtaining some satisfactory device against splashing from the wheels. Ills. 4800 w. Genie Civil—Dec. 14, 1912. No. 39084 D.

Napier
The 30-H.P., Six-Cylinder Napier. Illustrates and describes the interesting features appearing in the latest model. 2000 w. Autocar—April 12, 1913. No. 41374A.

Nazzaro

The 20-30 H. P. Nazzaro Car. Illustrates and describes interesting details. 1500 w. Auto Jour—Dec. 21, 1912. No. 38860 A.

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Plows

Noise Noise

The Origin of Noise in the Automobile. O. W. Hall. Explains causes of noisy operation and gives examples of unusual noises. 8000 w. Horseless Age—April 9, 1913. No. 41158.

N. S. U.

The 18-H.P. N. S. U. Car. Illustrated detailed description. 1000 w. Auto Jour—April 5, 1913. No. 41219 A.

Nyberg 1913 Line Includes Two Sixes. Illustrates and describes new models. 1500 w. Horseless Age—Nov. 13, 1912. No. 37587.

Omnibuses

Automobile Omnibus Service in Saxony (Automobil-Omnibus-Linien im Königreich Sachsen). An account of the twelve lines now in service. 4000 w. Zeit d Mitt_Motor Vereins—Dec. 15, 1912. No. 39019 D.

Steam Omnibuses. Thomas Clarkson. Describes the National steam 'bus and explains its advantages. 2500 w. Soc of Auto Engrs-June, 1913. No. 43299 N.

Omnibus Service

Results of the Bavarian Motor Post Service for 1911 (Betriebsergebnisse der bayerischen Motorpostlinien 1911). Herr Pflug. Statistics from the numerous omnibus lines operating in Bavaria. Ills. 4500 w. Zeit d Mitt Motorwagen Ver—Nov. 15, 1912. No. 38443 D.

The London Motor Omnibus Service.

T. B. Browne. Detailed account of this large and efficient service. Ills. and plates. 3500 w. S A E Bul-July, 1913.

No. 44328 N.

Development of Motor Omnibus Transportation in London. From report of E. S. Sharpwell-Smith to the recent Int. Road Cong. A report of remarkable success. 1200 w. Engng & Con—Aug. 27, 1913. No. 44780.

Development of Motor Omnibus Traffic in Austria. Abstract of a report made by Richard Hofer to the recent Int. Road Cong. in regard to the motor transport service. 1800 w. Engng & Con—Aug. 13, 1913. No. 44845.

Town Adopts Indiana Automobile James M. Hobart. Illustrated description of omnibuses in service at Huntington, Ind. 1800 w. Automobile -Aug. 14, 1913. No. 44364.

The 5-12-H. P. Opel Car. Illustrated description of a small car shown at Olympia. 1000 w. Auto Jour—Dec. 7, 1912. No. 38229 A.

Overland

The 20-25 h. p. Overland. Illustrates and describes the changes introduced in the 1913 model. 700 w. Autocar-Nov. 9, 1912. No. 37627 A.

One Overland Chassis for 1914. lustrates and describes the important changes introduced. 1500 w. Automobile—Aug. 14, 1913. No. 44365.

Packard

Full Report of Packard Motor Test. Gives details of the motor performance during 300-hour run. Ills. 2000 w. Automobile—May 22, 1913. No. 42344. **Painting**

Painting the Automobile. M. C. Hillick. Considers various methods of painting

both wood and steel. 1800 w. Horseless Age—Oct. 22, 1913. No. 46194. Painting the Metal Body Automobile. M. C. Hillick. Describes the preparation of metal surfaces and full details of the process. 2000 w. Horseless Age-Oct. 8, 1913. No. 45772.

Partin-Palmer

The Partin-Palmer "38." Illustrates and describes the interesting features. 1500 w. Horseless Age—Aug. 6, 1913. No. 44229.

Pearson-Cox

The Pearson-Cox Steam Car. Illustrated detailed description of the engine. generator, burner, etc., of the 1913 model. 3500 w. Autocar—March 29, 1913. No. 41128 A.

Pedals

Fitting the Car to the Driver. Illustrates and describes many pedal adjustments. 2000 w. 1913. No. 44232. Automobile—Aug. 7,

Petrol-Electric

Petrol-Electric Motor Vehicles. J. B. G. Damoiseau. Abstract. Describes the various types of petrol-electric systems in use and considers their advantages and disadvantages in various classes of ser-3500 w. Elect'n, Lond-May 30, 1913. No. 42764 A.

Peugeot

The 14-20 h. p. Peugeot. Illustrated detailed description of an interesting 1000 w. Autocar—Jan. 4, 1913. No. 39133 A.

Piccard-Pictet

The 30-40 h. p. Piccard-Pictet Chassis. Illustrates and describes chassis details. 1000 w. Auto Jour—Dec. 28, 1912. No. 38861 A.

Pistons

An Unusual Method of Handling an Automobile Piston. Albert A. Dowd. Describes methods of machining. Ills. 1200 w. Horseless Age—Sept. 17, 1913. No. 45212.

Plows

Mechanical Plows at the Bourges Exposition (Le labourage mécanique a l'exposition de Bourges). H. Pillaud. De-

Pope-Hartford

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Silence

scribes various motor plows and harrows exhibited. Ills. 7000 w. Tech Mod-Nov. 1, 1912. No. 37511 D.

Pope-Hartford

Pope-Hartford Introduces a Low-Priced "Forty." Illustrated description of this new model. 1000 w. Horseless Age—Oct. 30, 1912. No. 37200.

Propeller-Shafts

Stability of Automobile Propeller-nafts. J. M. Thomas. Discusses critical speed, and methods of determining it. 3000 w. S A E Bul—Dec., 1912. No. 39304 N.

Racing Cars

Two European Racing Cars. Chester S. Ricker. Illustrated descriptions of the Isotta-Fraschini and the Peugeot racer. 2500 w. Horseless Age—Oct. 1, 1913. No. 45631.

Radiators

Methods of Supporting Truck Radia-Illustrates and describes supports to protect truck radiators from injurious effects of road shocks and against injury from frame distortion. 1200 w. Horseless Age - March 12, 1913. No. 40675.

R. C. H. R. C. H. Cars. Illustrated description of a moderate-priced popular American car. 1500 w. Auto Jour-Jan. 4, 1913. No. 39134 A.

The 15.9 R. C. H. Car. Brief illustrated description. 1000 w. Autocar-March 8, 1913. No. 40698 A.

Repairs

Motor-Car Repairs; Brakes and Adjustments. J. T. Corner. Gives hints for the inexperienced. Ills. 1500 w. Mech Wld-Dec. 27, 1912. No. 38886 A.

Standardized Tire Rims. Drawings showing suitably dimensioned tire rims of the principal tire manufacturers. Auto Jour-July 12, 1913. No. 43890 A.

Road Resistance

Some Conditions Affecting the Inter-action of Motor Vehicle Wheels on Road Surface. L. I. Hewes. Read before the Am. Assn. for the Adv. of Science. Discusses certain sources of road resistance to the motor vehicle equipped with tires of approximately circular cross section. 1800 w. Engng & Con—Feb. 26, 1913. No. 40227.

Road Tests

Road Tests for Automobiles. William D. Ennis. Report of tests made at Brighton Beach truck to determine the variation in road resistance, air resistance, transmission loss and fuel consumption with variations in speed. 2000 w. Horseless Age—April 2, 1913. No. 41053. Rolls-Royce

A Trial of a Rolls-Royce. An account of a trip, including hill climbing, with remarks on the number of speeds. 2000 w. Autocar—July 26, 1913. No. 44161 A.

Rover

The 12 h. p. Rover Car. Illustrated description. 1300 w. Illustrated detailed description. Auto Jour—Jan. 18, 1913. No. 39455 A.

Salesrooms

Packard Salesroom and Service Station. Hartford, Conn. Illustrated description. 1500 w. Horseless Age-May 7, 1913. No. 41988 C.

The Hawkins-Halff Salesroom and Garage, Houston, Tex. Illustrated description of the garage and its management. 1500 w. Horseless Age—May 7, 1913. No. 41987 C.

The Locomobile Salesroom, Atlanta, Ga. Illustrated description of an attractive salesroom. 2000 w. Horseless Age
—May 7, 1913. No. 41982 C.

Schacht

Schacht Models for 1913. Illustrates and describes the latest models of this Cincinnati Co. 1200 w. Horseless Age—Feb. 5, 1913. No. 39781.

Self-Starters

American Starting System for Gaseline Motors (Amerikanische Anlasser für Benzin-Motoren). P. M. Heldt. part describes compressed air and compressed gas starters as applied to some of the leading makes. Ills. Serial. 1st part. 1400 w. Motorwagen—Oct. 10, 1400 w. N No. 37457 D.

Fitting a Car with a Self-Starter. Albert L. Clough. Considers electric and air starters and their installation. 1700 w. Horseless Age — April 2, 1913. 41050.

See also Electric Systems, under Automobiles.

Service System

Ford Service System. Explains the building and service scheme used for supplying the metropolitan district with cars and repairs. 3300 w. Automobile—Feb. 13, 1913. No. 39847. G. V.

S. G. V. 1914 Models With Electric Starter and Transmission. Illustrated description. 1500 w. Horseless Age-June 9, 1913. No. 42695.

Sheffield-Simplex

The 30 h. p. Six-cylinder Sheffield-Simplex. Illustrated description of an entirely new design. 1500 w. Nov. 9, 1912. No. 37628 A. Autocar-

Silence

Skillful Work is Silencing American Motors and Chassis. Information concerning present practice and means em-

Sleeve Valve

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Steering Gear

ployed to secure quietness. Ills. 3500 w. Automobile—Nov. 28, 1912. No. 37932.

Sleeve-Valves

The Knight Type Sleeve-Valve Motors. Henry H. Hower. Illustrates and describes its construction, explaining its advantages. 1500 w. Sib Jour of Engng

—May 1, 1913. No. 42417 C. Argyll Sleeve-Valve Tests. Argyll Sleeve-Valve Tests. A record of tests at Brooklands. Ills. 1500 w. Auto Jour—May 24, 1913. No. 42739 A. See Engine Tests, under Automobiles.

Slide Valves
The Question of Slide Valves (Zur Frage der Schiebermotoren). Mr. Knight and Herr. Riedler. Arguments for and against. Ills. 9400 w. Auto Rund—Jan 31, 1913. No. 40051 D.

Spark Plugs

Manufacturing J-D Spark Illustrates and describes the processes. 2500 w. Horseless Age—July 30, 1913. No. 44098.

Speedometers

Calibrating Speedometers. Gives results of some measurements made to ascertain the effect of tire depression. 1600 w. Autocar-Oct. 11, 1913. No. 45967 A.

Springs

The Design of Automobile Springs. J. Coapman. Gives tables, charts and formulae derived to enable construction in accordance with best practice. 1000 w. Am Mach—Nov. 14, 1912. No. 37381.

The Commercial Testing of Leaf

Springs. David Landau. Considers apparatus used and methods of testing.

Ills. 3000 w. Horseless Age—Oct. 30,

1912. Serial. 1st part. No. 37208.

The Testing of Motorcycle Springs.

W. M. G. Snow. Describes the testing device and states results which differ from accepted theory. 1000 w. Mach—Dec. 19, 1912. No. 38262.

Leaf Springs. Leavitt J. Lane. Considers the importance of steel composition, factors of design, tests, etc. w. S A E Bul—Dec., 1912. 1800 No.

89305 N.

Springs and Suspensions at the Shows. Asher Golden. Discusses European vs. American practice, details, materials, etc. 2500 w. Horseless Age—Jan. 15, 1913. (Special.) No. 39225 C. Springs. G. H. Baillie. Read before the Inst. of Auto Engrs. An account of

investigations made, facts observed, and theories based on them. 6000 w. Autocar-May 10, 1913. No. 42274 A.

G. H. Baillee. Defects in Springs. From a paper read before the Inst. of Auto. Engrs. Gives results of an investigation of springs, and remarks on their importance. Ills. 2500 w. AutomobileMay 29, 1913. Serial. 1st pat. No. 42559.

Springing Systems. W. G. Aston. A review of some present day forms of car suspension for front and rear axles and their merits or demerits. Ills. 4000 w. Autocar—June 7, 1913. No. 42874 A.

Tests on the Spring Mountings of Motor Cars (Versuche über die Abfederung von Kraftfahrzeugen). E. Bobeth. Describes methods of testing resilience in spring material. Ills. Serial, 1st part. 1600 w. Motorwagen—July 10, 1913. No. 44664 D.

Startera

What There Is to Be Seen in Self arters. Harry E. Dey. Illustrates and describes systems exhibited at the New York shows. 4500 w. Horseless Age—Jan. 15, 1913. (Special.) No. 39224 C.

Electric Self-starters. J. Dalrymple Bell. Detailed discussion of the electric

engine starting system. 2000 w. Auto-car—May 17, 1913. No. 42526 A.

The Bijur Lighting and Starting Sys-tem. Illustrated detailed description of this system which is built for either six or twelve volts. 2000 w. Horseless Age
—June 4, 1913. No. 42694.

Motor Starters. Ten minute papers,

prepared by manufacturers' representatives, describing types. Ills. 47 pp. S. A. E. Bul—June, 1913. No. 43340 N. Starting Gear for Automobile Engines

(Anlassvorrichtung für Automobilmotoren). K. Schirmbeck. The origin of the self-starter, and descriptions of the four systems; springs, compressed air, electric, and explosive mixtures. Serial, 1st part. 3200 w. Auto Rund—Sept. 15, 1913. No. 46055 D.

See also Electric Systems and Lighting, under Automobiles.

Stearns-Knight

Stearns-Knight Motor Continues Unchanged. The motors are practically unchanged but fitted with new bodies. 2500 w. Automobile-Oct. 31, 1912. No. 37205.

Steering

The Direction of Automobiles (Etude sur la direction des voitures automo-biles). P. Massot. A study as to the best method of mounting the steering rods. Ills. 3600 w. Rev de Mecan—July, 1913. No. 45332 E + F.

Steering Gear

Steering Gear Design Is Conservative. Illustrates and describes types. worm-and-gear types seem to be in great-est favor, but screw-and-nut construction 2500 w. Automobile are numerous. March 6, 1913. No. 40338.

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Tractors

Stoewer

The New 15-30-H.P. Stoewer Chassis. Illustrates and describes improvements introduced in this new model. 1000 w.

Auto Jour—Feb. 8, 1913. No. 39903 A.
The 13.9 H. P. Stoewer Car. Illustrates and describes features of this small-powered car. 2000 w. Auto Jour—June 21, 1913. No. 43368 A.

Straker-Squire The 15 H. P. Straker-Squire. Illustrated description and information concerning this new car. 1600 w. Jour-May 10, 1918. No. 42265 A.

Studebakers

Three New Studebakers. Illustrates and describes new designs. 2500 w. Automobile—Nov. 14, 1912. No. 37576.

The 20-25 h. p. Studebaker. Illustrated description of this carefully designed car.

Electric lighting and engine starting. 1000 w. Autocar-May 31, 1913. No. 42763 A.

Some Details of Studebaker Cars. Illustrates and describes new details introduced in the latest models. 1400 w. Horseless Age—July 9, 1913. No. 43669.

Suspension

8-Point vs. 4-Point. American engineers discuss the relative merits of the two systems of motor suspension. 2500 w. Automobile-Nov. 14, 1912. Serial. 1st part. No. 37575.

The New Cowey Pneumatic Suspension. Illustrated explanation of the design and its working. 1200 w. Auto Jour—Feb. 1, 1913. 39771 A.

Testing

Chassis Testing Apparatus. Dean. Presents advantages claimed for stationary over-road testing, discussing points of value in designing a standard, reasonably priced outfit for rear-wheel testing. Ills. Also discussion. 6000 w. S A E Bul—Aug., 1913. No. 45090 N.

Tires

The Choice, Care and Repair of Automobile Tires. C. H. Calkins. Reviews the history of their development, states their advantages, discusses sizes and loads, construction, substitutes, etc. 6800 w. Horseless Age—Dec. 18, 1912. No. 38309.

The Making of a Pneumatic Automo-le Tire. E. R. Hall. Illustrated debile Tire. tailed description of the work. from the crude rubber to the finished product. Sci Am-Jan. 11, 1913. 8500 w. 39101.

Tire Progress Shown by Anti-Skid Treads. Illustrated review of types. 5000 Automobile — Jan. 30, 1913. No. 39575 C.

Pneumatic Tires and Their Working

Conditions. C. P. A. Van Ferls. A detailed study. 3000 w. Horseless Age—

Feb. 19, 1913. No. 39968.
Solid Tires. Illustrated review of the heavy tires now on the market for all weights of vehicles. 5400 w. Automobile—Feb. 13, 1913. No. 39848.
Pneumatic Tires. P. W. Litchfield. Re-

views the history of pneumatic tire design, the causes of many changes, dis-

sign, the causes of many changes, discussing some of the problems. 4000 w. S A E Bul—May, 1913. No. 42477 N. Helpful Hints on the Purchase and Care of Tires. F. A. Henderson. 1500 w. Horseless Age—Sept. 24, 1913. No. 45484.

Tire Repairs—Roadside and Garage. J. Edward Schipper. The present number deals with roadside methods of curing troubles. 2500 w. Automobile—Sept. 18, 1913. Serial, 1st part. No. 45210.

Automobile Tires (Der Automobilpneumatik). Gerhard Hühener. The duties and purposes of pneumatic tires and their manufacture. Ills. 4000 w. Auto Rund -Aug. 31, 1913. No. 46054 D.

Torque

Motor Torque, Its Action and Reaction. Otto M. Burkhardt. A mathematical investigation showing how the vertical loads on springs and tires are affected by the motor power. Ills. 1700 w. Horseless Age—Sept. 24, 1913. No. 45435.

Automobile Rear Axle Design. K. W. Najder. A discussion of chain and gear transmissions. 1800 w. Mach, N Y—Sept., 1913. No. 44844 C.

Traction Engines

The Lining-Up of a Traction Engine. Describes the various operations leading to the lining up of an engine used for tractive work. Ills. 2500 w. Mech Wld -Jan. 31, 1913. No. 39790 A.

Another Method of Lining-Up Traction Engine. Describes a method. aiming to eliminate all unnecessary chipping and filing, more accurate alignment, more rigid construction, and shorter time. Ills. 1800 w. Mech Wld—March 14, 1913. No. 40818 A.

Engine Whose Four Traction Wheels Are Driving Wheels. Illustrated description. 1000 w. Engng & Con-

Aug. 13, 1913. No. 44346.

Tractors

Electric Tractor for Use on City Streets, Pennsylvania Railroad. Illustrates and describes a tractor recently constructed in the Pennsylvania shops at Altoona, Pa. 900 w. Ry & Engng Rev—Feb. 1, 1918. No. 39610. Economies of the Farm

Tractor. Philip S. Rose. An illustrated explana-

Transmission

COMBUSTION MOTORS

Diesel Engines

tion of the new way of tilling the soil. 2000 w. Sci Am — Feb. 1, 1913. No. 39608.

The Problem of the Small Farm Tractor. Lynn W. Ellis. Discusses the agricultural, mechanical and economical factors that must be considered. Ills. 3500

w. Sci Am—June 7, 1913. No. 42668.
Advantages of Tractor Transportation. Discusses various types and their driving systems. Ills. 2000 w. Sci Am—Aug. 30, 1913. No. 44899.

Transmission

See also Engines, under Automobiles.

Valve Gears

Side Valve Gear Operation (Der Antrieb von Schiebersteurungen). Praetorius. Diagrams illustrating the principles of operation. 2000 w. Motorwagen—Feb. 28, 1913. No. 41445 D.

Valves

Criticisms of Non-Poppet Valves To-Date. Eugene P. Batzell. Critical review of present practice in construction and design of various types of rotary and sleeve-valve motors. Ills. 2000 w. Automobile-Dec. 19, 1912. Serial. 1st part. No. 38317.

Wheels

Pros and Cons of Wire Wheels. Henry Souther. Compares wood and wire constructions. Ills. 2500 w. Automobile— Feb. 13, 1913. No. 39846.
Schermack Spring Wheel Acts on New

Principle. Illustrated description of the design and action, and of the resiliograph devised to test the vibration-absorbing qualities. 1000 w. Automobile-Feb. 27. 1913. No. 40234.

Wheels and Tires for Heavy Loads (Les roues et les bandages pour poids lourds). D. Renaud. Studies of the destructive forces to be counteracted in the

design of automobile truck wheels. Ills. Serial. 1st part. 8200 w. Genie Civil— Feb. 22, 1913. No. 40596 D.

Motor Truck Wheels. Arthur J. Slade. A discussion of the relative merits of wood and metal wheels. 3000 w. S.A. E. Bul—May, 1913. No. 42473 N.

The Wire Wheel-Where It Stands Today. Earle A. Ryder. Gives reasons for increasing the popularity of the wire wheel and describes present types. 3000 w. Horseless Age-April 80, 1913. No. 41828.

Making Hayes Wheels. Illustrated description of methods used in a plant at

Jackson, Mich. 2000 w. Horseless Age July 2, 1913. No. 43440. Wire Wheels for Pleasure Cars. George W. Houk. Gives a brief history of the wire wheel as developed in England and its adaptation to the American automobile for American roads. 2500 w. SAE Bul -Sept., 1913. No. 46122 N.

Wolseley

The New Wolseley Models. Outlines the new policy of the Wolseley Co. of confining the output to three models. Illustrates and describes the cars. Autocar-Oct. 19 and 26, 1912. Serial. 2 parts. No. 37285 each A.

Wolseley Cars for the Motor Show. Drawings and description of changes in design and details. Plate. 306 Eng—Nov. 1, 1912. No. 87898 A. 80Ŏ0 ₩.

Worm Gear

Worm Gear. F. W. Lanchester. Read before the Inst. of Auto. Engrs., London. (Condensed.) Reviews the use of worm transmission in road automobiles, de-scribes the new method of testing introduced and discusses details. 4000 w. Horseless Age—June 25, 1913. No. 43190.

COMBUSTION MOTORS

Cams

See same heading, under Machine Elements and Design.

Carburetion

See same heading under Automobiles.

The Flameless or "Convergent" Combustion of Gases. Dr. Jean Meunier. A study of the action of incandescent electrical conductors in firedamp mixtures, and the peculiarities of convergent com-3000 w. bustion. Ills. Col Guard-No. 39255 A. Jan. 10, 1913.

Flameless Combustion (Flammelose Feuerungen). C. Kinzbrunner. Discussing the construction and operation of the Bone-Schnabel boiler and system. Plates. Serial, 3d part. 2500 w. Feuerungstechnik—Jan. 1, 1913. No. 40021 D.

Cooling

Cylinder Cooling in Small Internal-Combustion Engines. Briefly reviews air cooling and water cooling methods. 1600 w. Auto Jour — Feb. 8, 1913. No. 39904 A.

Diagrams
Valve Diagrams for Four-Cycle Engines (Steuerungsdiagramm für Viertaktmaschinen). J. Magg. An application of the steam indicator diagram to internal combustion engines. Ills. 1700 w. Zeit des Ver deutscher Ing-Feb. 15, 1913. No. 40540 D.

Diesel Engines

The Application of Diesel Engines to Land and Marine Work. D. M. Bright. Brief review of the early history of the Diesel engine with illustrated description

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and statement of advantages, applications, etc. 2000 w. Can Engr—Nov. 7, 1912. No. 37341.

The Diesel Engine (Le Moteur Diesel). E. Sauvage. Reviews the history, principles, operation and development of this prime mover. 5400 w. Rev Gen des Sciences—Oct. 30, 1912. No. 37505 D.

Principles of the Diesel Oil Engine. Herbert Haas. Describes the Diesel principle, and gives figures on cost of power plant. Ills. 4500 w. Eng & Min Jour—April 26, 1913. No. 41544.

The Oil Consumption and Mean Effective Pressure of Diesel Engines. R. Royds and J. W. Campbell. A discussion of the most economical mean effective pressures. 2500 w. Engr, Lond—April 11, 1918. No. 41395 A.

The Development of the Diesel Internal

The Development of the Diesel Internal Combustion Engine. Gaston L. Carels. A review of successive alterations effected in the Diesel engine before reaching its present stage, and the great number of ways in which it is now being applied. 4500 w. Cassier's (Lond)—March. 1913. No. 42100 E.

Modern Continental Oil Engine Practice. Alfred Büchi. Particularly concerns the Diesel engine. A study of fuels available, locomotives, stationary vertical and horizontal engines, and marine engines. Ills. 7200 w. Cassier's (Lond)—March, 1913. No. 42101 E.

Large Diesel Engines. Dr. Paul H. R. Nettmann. Some considerations relating to their increase of output, power limitations, evolution and design, with special reference to the combustion of petroleum residues and heavy tar-oils. Ills. 6900 w. Cassier's (Lond)—March, 1913. No. 42102 E.

British Oil Engine Practice. W. D. Wansbrough. An extensive review of the lines of development and designs practiced by British constructors of Diesel engines. Ills. 11400 w. Cassier's (Lond)—March, 1913. No. 42104 E.

The Development of Diesel Engines for Stationary Purposes. Geo. E. Heath. A brief outline of the application of the Diesel principle for stationary purposes, and future possibilities. Ills. 3000 w. Cassier's (Lond) — March, 1913. No. 42106 E.

A French Diesel Engine. Illustration with detailed description of 350 h. p. marine Diesel engine, F. & C. de la Mediterranee. 3500 w. Engr, Lond—May 2, 1913. No. 42008 A.

Some Stationary British Diesel Engines. Describes various types, briefly outlining the main features of design and describing more particularly the minor details. Ills. 3300 w. Engr,

Lond—May 9, 1913. Serial. 1st part. No. 42291 A.

Recent Diesel Marine Engines, and Particularly the Trials of the Oil-Engined "Juno" (Les nouveaux moteurs Diesel marins et en particular les essais du petrolier "Juno"). A list of Diesel-engined ships, either in service or under construction, and comparative results of tests of the "Juno." Ills. 4800 w. Tech Mod—April 1, 1913. No. 41523 D.

The Possibilities and Limitations of the Marine Diesel Engine. W. P. Sillince. Advantages and disadvantages of this prime mover as applied to tank vessels, cargo vessels, passenger liners, and naval service. 4800 w. Cassier's (Lond)—March, 1913. No. 42103 E.

The Application of Diesel Engines to Battleships (Application des moteurs Diesel aux navires de guerre). P. Dumanois. A study of conditions to be met in weight and power. Diagrams. 7800 w. Tech Mod — April 15, 1913. No. 42172 D.

First American-Built Marine Diesel Engines. Brief illustrated description of types. 1200 w. Power — June 3, 1913. No. 42657.

The John Samuel White Diesel Engine. Illustrates and describes this British-built Diesel engine. 4000 w. Engr, Lond—June 6, 1918. No. 42889 A.

June 6, 1913. No. 42889 A.

The Cost of Generating Power with
Diesel Oil Engines. Gordon Kribs. Gives
statistics from plants at Sherman and
Cleburne, operated by the Texas Power
& Light Co. 1000 w. Can Engr—July
10. 1913. No. 43681.

10, 1913. No. 43681.

Power Applications of Diesel Engines in Industrial Plants. C. Van Langendonck. Describes characteristic types and considers their installation requirements. Ills. 1200 w. Engineering Magazine—Sept., 1913. No. 44767 B.

Two-Cycle "Semi-Diesel" Engine. Il-

Two-Cycle "Semi-Diesel" Engine. Illustrates and describes Petters 150 h. p. three-cylinder semi-Diesel engine. 800 w. Engr, Lond—Aug. 15, 1913. No. 44731 A.

Large Diesel Engines, Their Fuels, Construction and Applicability (Gross-dieselmotoren, ihre Brennstoffe, Konstruktion und Anwendungsgebiete). A chart study of the properties in seven possible fuels, and a review of present types. Ills. 3000 w. Zeit des Ver deutscher Ing—July 19, 1913. No. 44654 D.

The Diesel Engine in America. Illustrated account of the engines of the Diesel type built in America, with critical comment on the lack of progress. 2000 w. Engr, Lond—Aug. 22, 1913. No. 44925 A.

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The Twentieth Year of the Diesel Engine (Les Vingt Ans du Moteur Diesel). Aimé Witz. A review of the development occurring in the past twenty years since its inception. 7200 w. Tech Mod—Aug. 1, 1913. No. 45333 D.

Diesel Engine Cylinder Dimensions. Editorial discussion of the proposed system to work Diesel engines in an atmosphere much denser than that we breathe. 2000 w. Engng—Sept. 26, 1913. No. 45740 A.

New Generator for Diesel Engines. Illustrated description of a new form of alternator for coupling to Diesel engines, built on the "outer-pole" principle. 1000 w. Engr, Lond—Sept. 19, 1913. No. 45574 A.

Horizontal Diesel Engines at the Kingston Electricity Works. Describes new plant at the Kingston-on-Thames Elec-tricity Works. 1000 w. Engr, Lond— Oct. 3, 1913. No. 45867 A.

Explosion of a Diesel Engine Receiver at Bray. Report by G. S. Taylor on the circumstances attending the explosion of a compressed air receiver of a Diesel engine which occurred July 10, 1912. Also editorial. Ills. 7000 w. Mech Engr— Oct. 3, 1913. Serial, 1st part. 45850 Å.

The Ghent International Exposition (Weltausstellung Gent). Description of the 400 hp. Diesel engines exhibited by the Société Anonyme des Forges et Chantiers de la Méditerranée. Ills. Serial, 1st part. 1700 w. Elek Rund-Aug. 21, 1918. No. 46070 D.

See also Pumping Plant, under Hydraulic Machinery, and Locomotives, under RAILWAY ENGINEERING, Motive

Power and Equipment.

See also Diesel Engines and Motor Ships, under Marine and Naval Engineering; and Gas Engines, under Mechanical Engineering, Combustion Motors.

Diesel Motor

An Interesting Small-Powered Diesel Motor. Illustrates and describes an Italian Diesel motor designed on marine lines and showing new features of interest. 1600 w. Engr, Lond-March 14, 1913. No. 40833 A.

See also Central Stations, under ELEC-TRICAL ENGINEERING, Generating Stations, and Diesel Engines, under MARINE AND

NAVAL ENGINEERING. **Engine Cooling**

Water Supply for Internal-Combustion A. N. Rye. Describes a system installed in a generating station containing 500 h. p. of Diesel engines and 960 h. p. of gas engines. 1800 w. Elec Rev, Lond—Aug. 1, 1918. No. 44304 A. A New Method of Cooling Gas Engines. Bertram Hopkinson. Describes a method of internal injection of water against the metal surfaces. 5000 w. Inst of Mech Engrs—July 29, 1913. No. 44317 N.

The Cooling of Gas Engines. Editorial review of Prof. Bertram Hopkinson's paper before the Inst. of Mech Engrs. 2200 w. Mech Engr-Aug. 8, 1913. No. 44451 A.

Engines

Increasing the Power of Combustion Motors and a New Six-cycle Motor (Die Steigerung der Leistung von Verbrennungsmotoren und ein neuer Sechs-Emil Schimanek. taktmotor). retical calculations on increased power through six-cycle engines; principles and operation of the author's motor. Ills. 5500 w. Zeitschr des Ver deutscher Ing-Jan. 25, 1913. No. 40045 D.

Engine Tests

Tests on Small Gasoline Engines. F. M. and E. A. White. Describes engines and methods of conducting tests, giving conclusions. 1500 w. Power—Aug. 26, 1913. No. 44585.

Engine Troubles

Gasoline-Engine Troubles and Their Symptoms. A. L. Brennan, Jr. Considers causes of failure to start, of low efficiency, of misfiring and other operations. 900 w. Power—Sept. 23, 1913. No. 45275.

Exhibitions

The Smithfield Club Show. Illustrates and describes the exhibits, especially the internal combustion engines. 5000 w. Engr, Lond—Dec. 13, 1912. No. 38530 A.

Internal-Combustion Engines at the Ghent Exhibition. Describes the engines shown, illustrating the internal combustion engine for navy tank steamer. 1400 w. Engng—Aug. 1, 1913. No. 44321 A. See also same headings, under Aero-

nautics, and Automobiles.

Flywheels

Note on Fly-Wheel Design for Internal-Combustion Engines. Robert Oliphant Boswall. Investigates the difference that exists in the design of wheel to suit both engines governed by throttling and engines governed on the hit and miss principle. 2500 w. Engng—Dec. 6, 1912. No. 38243 A.

Fuels Heavy Oil as Fuel for Internal Combustion Engines. Irving C. Allen. Gives the result of an extended search in the United States and abroad for some means of more effectively burning the heavy asphaltum oils. With bibliography. 36 pp. U. S. Bureau of Mines—Tech. paper 37. No. 43617 N.

A Remarkable Coal-Gas Engine. lustrated description of the engine invented by Dr. Archibald Low, working on coal. 1000 w. Elec Rev, Lond—Nov. 15, 1912. No. 37806 A.

Comparative Fuel Values of Gasoline and Denatured Alcohol in Internal Combustion Engines. R. M. Strong and Lauson Stone. A detailed description of the equipment used, the methods of procedure, and the complete logs and deductions from the various tests. Ills. 286 pp. U S Bureau of Mines—Bul. 43. No. 37399 N.

Benzine and Benzol (Benzin und Benzol). K. Dieterich-Helfenberg. A discussion on the diverse properties of these two combustion-engine fuels, and studies of their characteristics. 4500 w. Zeit d Mitt Motorwagen Ver—Oct. 15, 1912. No. 37455 D.

Naphthalene Motors (Les Moteurs a Naphtaline). L. Ventou-Duclaux. General consideration in the use of naphthalene as a combustible in combustion motors. Ills. 2800 w. Tech Mod—Nov. 1, 1912. No. 37509 D.

The Use of Naphthalene as a Combustible in Combustion Motors (Utilisation de la Naphtaline comme combustible dans les moteurs a explosions). M. L. Venton-Duclaux. Discusses conditions governing its use, advantages obtained, arrangement of carburetors, etc. 12,000 w. Mem Soc Ing Civ de France-Oct., 1912. No. 38482 G.

Power from Kerosene. L. W. Ellis and W. R. Dray. Describing a system using oil, kerosene and distillates in the ordinary type of gas engine. Ills. 3000 w. Sci Am Sup—Feb. 15, 1913. No. 39888.

Developments in Oil Burning. E. H. Peabody. Illustrates and describes methods of introducing air to secure proper

ignition with the oil spray. 1200 w. Power—Feb. 18, 1913. No. 39896.
Driving Media for Internal Combustion Engines (Die Treibmittel des Verbrennungsmotors). Oscar Schaarschmidt. Discussion on the relative merits of the different grades of petroleum products as fuel. 2000 w. Schiffbau—Feb. 26, 1913. No. 40553 D.

Kerosene and the Important Factors in Its Combustion. Harrington Emerson. Discusses the hydrocarbons and their characteristics, perfect combustion, and the inherent difficulties. 3500 w. Horseless Age-April 2, 1913. No. 41054.

The Influence of Flame Temperature on the Value of Combustibles (Ueber den Einfluss der Flammentemperatur bei der Bewertung der Brennstoffe). A. Gwiggner. Plans for an equitable basis for the cost of fuels by their heat values, and tables on the values of different fuels. 6500 w. Stahl u Eisen—March 6, 1913. No. 41402 D.

The Gasoline and Kerosene Situation. From an address by John A. Secor before the Society of Automobile Engineers (Indiana Section) at Indianapolis, Feb. 18, 1913. 2500 w. Sci Am—May 17, 1913. No. 42099.

17, 1918. No. 42099.
Petrol and Alcohol Internal Combustion Engines. Editorial review of Bulletin No. 43, of the U.S. Bureau of Mines. 4000 w. Engng-May 23, 1913.

42779 A.

The Question of Cheap Carburetion (La question du carburant à bon marché). G. Lumet. The fuel problem and possible resources. 4000 w. Tech Mod—May 15, 1913. No. 43068 D.

Fuel and Lubricants for Internal Combustion Engines. B. H. Arnold. cusses petroleum, its occurrence, composition and refining; the use of gasolene and naphtha in the engine, specifications and purchase, and possibilities of other liquid fuels. 4500 w. Gen Elec Rev—Oct., 1913. No. 45581 C.

The Chemical Examination of Liquid W. Hamilton Patterson. From Fuels. Jour. of Soc.. of Chem. Ind. Gives results obtained in the examination of various liquid fuels. 1500 w. Chem Engr.—Sept., 1913. No. 45594 C.

The Production of Motor Spirit from Coal. A. Rollason and A. W. Taylor. Investigates the yield of motor spirit and heavy oil from coal, the expenses and working costs. 2000 w. Col Guard—Sept. 19, 1913. No. 45566 A.

Motor Oils (Ueber Treiböle). E. J.
Constam and P. Schläpfer. Detailed

analyses of fuel oils of all kinds, their specific gravities, flash points, viscosity, water content, etc. Ills. Serial, 1st part. 4400 w. Zeit des Ver deutscher Ing—Sept. 20, 1913. No. 46040 D.

See also same heading, under Automomobiles, and under Steam Engineering; Combustion, under Combustion Motors; and Oil Fuel, under Marine and Naval Engineering: also Natural Gas and Petroleum Products, under MINING AND ME-TALLURGY, Minor Minerals; and Benzol, under Mining and Metallurgy, Coal and Coke.

Gas Engine Power

An Example of Low Cost Gas Engine Power. Gives operating costs in two Cincinnati industrial establishments using natural gas, illustrating and describing one of the engines. 400 w. Ir Age— Dec. 26, 1912. No. 38539 C.

Gas Engines Modern Gas-Engine Design. Discusses

some of the difficulties of design and gives the correct proportions which actual working conditions have approved. 1800 w. Mech Wld—Nov. 15, 1912. Serial. 1st part. No. 37817 A.

Operating Gas Engines. A. L. Brennan, Jr. Briefly considers ignition troubles and other causes of failures.

w. Power—Nov. 26, 1912. No. 37784. Four-Cylinder Vertical Gas-Engin Four-Cylinder Vertical Gas-Engine. Illustrated description of a British engine recently shipped to New Zealand for a tramway power station. 1200 w. Engng—Nov. 8, 1912. No. 37639 A.
Gas Engine with Corliss Releasing Valve Gear. Illustrated description of an engine in service in Racine, Wis. 800 Gas-Engine.

Power—Nov. 19, 1912. No. 37618. Groundwork for Experiments on Two-

Cycle Engines (Grundlagen für die Untersuchung von Zweitaktmaschinen). P. Meyer. Fundamental principles of operation. Diagrams. 5000 w. Zeitschr des Ver deutscher Ing—Oct. 5, 1912. No. 87447 D.

Compound Engines for Explosion, or Combustion and Air Compression (Moteurs mixtes à explosion ou à combustion et à air comprimé). M. L. Letombe. Automatic starting and overloading of en-gines. Ills. 7500 w. Mem Soc Ing Civ de France—Sept., 1912. No. 37485 G. The Modern Gas-Engine. A. Vennell

Coster. Abstract of a lecture before the Nottingham Engng Soc. A general survey of the development, its fuels, efficiencies, etc., particularly recent develop-ments in construction. Ills. 5000 w. Engng—Nov. 22, 1912. No. 38034 A.

Gasoline Engine Economy. A. E. Potter. From a paper read before the Nat. Gas Assn. Considers the factors affecting the economy. 1400 w. Power—Dec. 17, 1912. No. 38218.

A System of Gas Engine Governing. George S. Cooper. From a paper read before the Ohio Soc. of Mech., Elec., & Steam Engrs. Discusses governing methods, and their fuel economy. Ills. 20 w. Power—Dec. 10, 1912. No. 38104.

Gas Engines at the Central Furnaces. A. D. Williams. Illustrated description of a gas-engine installation at the plant of the American Steel & Wire Co., at Cleveland, O. 2500 w. Power—Dec. 3, 1912. No. 38018.

Some Practical Cure for Gas-engine Troubles. Hints concerning points that need attention. 1800 w. Mech Wld—Dec. 6, 1912. No. 38241 A.

The Present Position of the Gas Engine. Percy R. Allen. A comparison of working costs and relative advantages of Diesel and gas engines. Ills. 11400 w.

Cassier's (Lond) — March, 1913. 42105 E

Heat Balance of a Gas Engine. Julian C. Smallwood. How to make a complete economy test of a gas engine. 1500 w. Power—April 1, 1913. No. 40966.

Recent Developments in Engines for Iron and Steel Works. H. H. Hoffman. Illustrates and describes recent types of large power gas engines and their appli-cations in iron and steel works. 1600 w. Ir & Coal Trds Rev-April 4, 1913. No. 41247 A.

Some Developments of the Gas Engine. Edward Brown. Considers the two-strokecycle engines, the four-stroke cycle engines, and the development in America. 3000 w. Power—April 15, 1913. No. 41209.

Notes on a Bituminous-Producer Gas Engine Plant. J. R. Crowell. Read before the S. African Inst. of Engrs. Gives particulars of gas engines using gas produced from S. African bituminous coals. Ills. 3000 w. Mech Engr—April 4, 1913. No. 41229 A.

Heavy Duty Gas Engines. Illustrates and describes types of motor-driven boats, explaining the service they are rendering. 2500 w. Marine Rev—May, 1913. No. 42084 C.

A Proposed Slow-Combustion Gas Engine. R. J. Kingston and T. P. Shilston. Considers the present limitations regarding the size and thermal efficiency of the explosion gas engine, and submits a pro-

posed design to overcome difficulties. 2000 w. Mech Wld—April 8, 1913. Serial. 1st part. No. 41761 A.
Gas and Oil Engines for Electric Supply Stations. A. N. Rye. Gives results obtained in a central station on the Island of Guernsey, depending almost entirely on gas and Diesel engines, and where both classes of engines are run in the same power house under the same conditions. 2500 w. Elec Rev, Lond—May 2, 1913. No. 41995 A.

Gas-Engine Sounds. A. L. Brennan, Jr. Considers sounds produced by the normal operation, and other sounds, and what they indicate. 1500 w. Power-

May 20, 1913. No. 42235.

Practical Operation of Gas Engines
Using Blast-Furnace Gas as Fuel.
Charles C. Sampson. Discusses the features upon which the operation depends. Ills. 5000 w. Jour Am Soc of Mech Engrs-May, 1913. No. 42408 D.

The Illmer Two-Stroke-Cycle Gas En-Illustrated description of an engine designed for heavy-duty service, along the lines of steam-engine practice. 1200 w. Power — May 27, 1913. No. 42398.

The Gas Engine in the Steel Industry. Heinrich J. Freyn. From a paper read before the Am. Ir. & St. Inst. Compares the installation and operating costs of blast furnace and steel works gas power plants with other types of power plants. Also discussions. 11500 w. Ir Age—May 29, 1913. No. 42557 C.

1000 Horse-Power Four-Cylinder "Premier" Gas Engine. Illustrates and describes a single-acting horizontal gas-engine of English manufacture. 1500 w. Engng—May 30, 1913. No. 42782 A.

The Working Fluid of Internal-Combustion Engines. Dugald Clerk. The Gustav Canet lecture delivered before the Jun. Inst. of Engrs. Discusses the temperature of the working fluid, the internal energy, loss of energy, combustion, etc. 7800 w. Engrg—July 4, 1913. Serial, 1st part. No. 43721 A.

Gas Engine Efficiency. A. L. Brennan, Jr. How to locate troubles, and their remedies. 4000 w. Rudder—July, 1913. Serial, 1st part. No. 43495 C.

Gas Engine Practice. W. Fennell. Abstract of a paper read before the Birmingham Dist. Elec. Clubs. Remarks are confined to engines of from 12 in. to 36 in. diameter pistons, such as would be met with in stations up to 3000 kw. capacity. 3000 w. Mech Engr—July 4, 1913. No. 43713 A.

The Big Ford Gas Engine. F. R. Low. Illustrated detailed description. 700 w. Power—July 22, 1913. No. 43844.

A Model Gas Engine Plant in Japan. Brief illustrated description of a Mond gas plant installed at the Kawasaki dockyard, Japan. 1000 w. Elec Rev, Lond—July 25, 1913. No. 44162 A.

Scavenging Tests on Gas Engines (Ueber Ausspülverfahren bei Gasmaschinen). A. Nolte. An indicator study of the effectiveness of the exhaust stroke. Diagrams. 2500 w. Stahl u Eisen—Aug. 7, 1913. No. 44612 D.

Removing Carbon from Gas Engines. Joseph A. Anglada. Gives experiences with denatured alcohol for cleaning the engine interior. 2000 w. Ir Age—Sept. 18, 1913. No. 45203 C.

Producer Gas Engines. Reports results obtained with a type of engine developed by the Wolverine Motor Works, of Bridgeport, Conn. Ills. 2500 w. Marine Rev—Sept., 1913. No. 44964 C.

The Illmer Gas Engine. Illustrated description of a double-acting machine operating on a two-stroke cycle. 2000 w. Prac Engr, Chicago—Sept. 15, 1913. No. 45135.

See also Fuel, under Combustion Motors, and Central Stations, under ELECTRICAL ENGINEERING, Generating stations, and Gas Power, under Power and Transmission, and Shop Practice, under Machine Works and Foundries.

Gases

Industrial Combustible Gases. J. M. Rusby. An outline of the qualities and methods of production of the more important gases used in the arts, etc. Ills. 11800 w. Jour Fr Inst—July, 1913. No. 44028 D.

Gasoline

The Condensation of Gasoline from Natural Gas. George A. Burrell and Frank M. Siebert. Read before the Am. Chem. Soc. Gives results of work performed by the Bureau of Mines. 3000 w. Chem. Engr.—Sept., 1913. No. 45590 C.

Gas Producers

Experiments on a Peat Suction-Gas Installation (Beproeving eener turf-zuiggasinstallatie). J. Rutten and Chr. Muller. Details of experiments and results. Ills. 2200 w. De Ingenieur—Oct. 19, 1912. No. 37481 D.

The Distillation Furnace (Die Entgasungsöfen). Dr. Volkmann. Modern retort furnaces in the production of illuminating gas. Ills. Serial, 1st part. 2200 w. Feuerungstechnik—Feb. 1, 1913. No. 40025 D.

A Bituminous Gas Producer Plant. A. A. Potter. Describes a plant installed at the Kansas State Agricultural College. Ills. 1500 w. Power—Dec. 31, 1912. No. 38700.

See also Peat, under MINING AND METALLURGY, Coal and Coke, and Internal Combustion Motors, under Combustion Motors.

Gas Pumps

The Humphrey Internal Combustion Pump, and Some Proposed Developments. Editorial Comment, with a sketch of developments described by Mr. Humphrey in a recent lecture. 1500 w. Engrg—May 23, 1913. No. 42777 A.

Gas Turbines

Baxter's Gas Turbine. Illustrates and describes a type of gas turbine in which the combustion chambers are formed partly in a rotating impact wheel and partly in a closed case within which the impact wheel rotates. 1200 w. Mech Engr—Nov. 29, 1912. No. 38124 A.

The Problem of the Gas Turbine (Le problème de la turbine à gaz). E. Grauce. Theoretic and practical studies of some thermic cycles applicable to gas turbines. Diagrams of some of the theories. 9000

Ignition

Rev de Mecan-Dec. 31, 1912. No. 39083. E. + F.

The Outlook and Possibilties for Constant Pressure Gas Turbines for Blast-Furnace Gases by Experiment (Die Aussichten und die Ausführungsmöglichkeit von Gleichdruckgasturbinen für Hochofengas zu Versuchszwecken). Curt Stedefeld. A careful mathematical study of design. Ills. Serial. 1st part. 2400 w. Zeit f d ges Turbinenwesen — Feb. 20, 1913. No. 40556 D.

Compressors for Gas Turbines (Ueber Verdichter für Gasturbinen). Wilhelm Gentsch. Principles of operation; some leading types and their working theory. Ills. Serial. 1st part. 1800 w. Die Turbine—March 5, 1913. No. 41455 D. See Internal Combustion Engines,

under Combustion Motors.

Ignition

Gas Engine Ignition. P. J. Haler and H. T. Wright. Describes trouble with a small engine fitted with tube ignition, and the change to "Lodge" ignition. Ills. 1000 w. Prac Engr—Dec. 26, 1912. No.

Ignition from Dry Cells. A. L. Brennan, Jr. Explanatory notes for the inexperienced. 1200 w. Power—Jan. 7. No. 38842. 1913.

Causes and Effects of Premature Ignition in Explosion and Combustion Engines (Causes et effets des allumages prématurés dans les moteurs à explosion et à combustion). M. L. Letombe. A study by indicator diagrams of effects and suggestions for remedies. Ills. 6000 w. Mem Soc Ing Civ de France-May, 1913. No. 43556 G.

Make-and-Break Igniters. Earl Pagett. Explains some of the peculiarities in its operation. Ills. 1500 w. Power—Aug. 5, 1913. No. 44153.

Ignition Point of Internal Combustion ngines. Reginald Trautschold. Discusses the effect on efficiency. 1500 w. Prac Engr, Chicage—Oct. 15, 1918. No.

Automatic and Fixed Ignition Timing in Combustion Motors (Die selbsttätige und feste Zündeinstellung bei Explosionsmotor). Josef Löwy. Illustrations and description of several German magnetos of both types. 2600 w. Elek u Masch-Oct. 5, 1913. No. 46084 D.

See also same heading, under Automo-

Internal Combustion Motors

Internal Combustion Motors and Gas Producers (Moteurs à Combustion Interne et Gazogènes). Léon Letombe. A comprehensive review, in four parts, divided into suitable chapters, of gas engines, their fuel, design, powers, etc.; gas producers; combustible-liquid engines, and general considerations. Ills. 90 pps. Tech Mod (Supplement)—Dec. 15, 1912. No. 39065 H.

Oil Engines

Internal Combustion Engines (Motori a combustione interna). Igino Saraceni. Description of the A. E. G. oil engine and the Garuffa gas turbine. Ills. 2000 w. Industria—Aug. 10, 1913. No. 45365 D.

Internal Combustion Engines (Motori combustione interna). E. Garuffa. Some corrective and additional remarks on the Garuffa gas turbines, as previously described by I. Saraceni. 1200 w. Industria—Aug. 31, 1913. No. 45367 D.

Lubrication

Lubrication of Gas Engine Cylinders. A. L. Brennan, Jr. Suggestions for the selection and use of oils for cylinder lu-1200 w. Power-Jan. 28, brication. 1913. No. 39495.

Manograph

The Manograph. Hugo C. Gibson. Describes the features of the Hospitalier type in particular, and some of the steps in its development, showing the value of the indications obtained. Ills. 2000 w. S. A. E. Bul-April, 1913. No. 42341 N.

Oil Engines

Land and Marine Oil Engines. C. Lakin-Smith. Read at the Hardware Exhibition. Considers causes of the popularity of the oil engine and discusses types. 1500 w. Prac Engr-Nov. 7, 1912. No. 37621 A.

The Significance of Oil Engine Developments. W. T. Price. From a paper before the Phila. Found. Assn. trates and describes large and small units now being built which are designed to operate with low-grade fuel. 2000 w. Ir Trd Rev-Dec. 26, 1912. No. 38587.

Brake Test on a 75-h. p. Oil Engine. A. A. Potter and W. W. Carlson. Report of test made to determine whether the engine would deliver 75 brake h. p. with a fuel consumption of 1.25 pint per Elec Wld 800 w. brake h. p.-hr. Ills. Jan. 11, 1913. No. 38998.

Heavy-Oil Marine Engines (Motore ad olio pesante tipo marino). Enrico Mariotti. Description of operation of the Mariotti engine for marine purposes. Ills. 2800 w. Industria—Jan. 5, 1913. No. 39097 D.

Classification of Oil Engines. P. Ostergren. Explains some of the problems solved in the development of oil engines, and illustrates typical vaporizing and mixing arrangements. Outlines the characteristics of the Diesel engines.

HEATING AND COOLING

Air Conditioning

2000 w. Power - Feb. 11, 1913. No. 39758.

Bolinder's Crude-Oil Engine. Illustration, with detailed description of a new

machine. 1600 w. Engng—April 18, 1913. No. 41768 A.

The Principles of Fuel Oil Engines.
Prof. Hirshfeld. A study of the preparation of the fuels for use in engines, and the problems of operation. 6800 w. Wis

Engr—May, 1918. No. 42442 C.
Marine Oil Engines (Schiffsölmaschinen). Walter Mentz. A comprehenschinen). Walter Mentz. A comprehensive study of the several types of engines, their builders and performance on various vessels. Ills. Serial. 1st part. 9600 w. Schiffbau-April 9, 1913. No. 42126 D.

Crude Oil Engines (Ueber Rohölmotoren). F. Weinreb. A review of the theory of oil engines and the types constructed, leading up to the Diesel design. Ills. 4000 w. Elek u Masch—May 25, 1913. No. 43043 D.

The Principles of Fuel Oil Engines. C. F. Hirshfeld. Read before the Am Soc of Agri Engrs. Discusses the chemical and physical basis of their operation. 2500 w. Sci Am Sup-July 19, 1913. Se-

rial, 1st part. No. 43783. New Heavy-Oil Engine. A. E. Ballin. Illustrated description of the Snow horizontal oil engine, with information re-lated. 1200 w. Power—Aug. 12, 1913. No. 44294.

Test of a Kerosene-Oil Engine. H. D. Wile. Brief report of a test of the Falk kerosene engine carried out at the Uni-versity of Wisconsin. 700 w. Elec Wld

-Aug. 23, 1913. No. 44566. The A. E. G. Oil Engine. Illustrated detailed description of a new engine for the direct driving of electric dynamos. 1000 w. Mech Engr-Aug. 8, 1913. No. 44452 A.

Description of Nurnberg Two-Cycle 450-B. H. P. Heavy-Oil Engines. Louis Shane. Drawings and description. 4000 Jour Am Soc of Nav Engrs-Aug., 1913. No. 45171 H.

Water-Cooled Clutch and Slipping Gear for Oil-Engine Drives. Illustrated description. 600 w. Engng—Oct. 17, 1913. No. 46246 A.

The Oil-Motor Industry in Italy. stract trans. from Des Oelmotor. Review of the development with illustrated description of types. 1500 w. Power—Oct. 7, 1913. No. 45702.

Observations on the Oil Engine. John F. Wentworth. Reviews the development, Aiming to show that the Diesel engine is a reproduction of the ideal engine described by de Rochas nearly 50 years ago, and comparing Diesel and Wentworth engines. \$000 w. Power—March 11, 1913. No. 40384.

Two-Stroke Cycle Continuous-Combustion Oil Engines for Ships. Shows two arrangements designed and patented by Messrs. Sulzer Bros. Ills. 1000 w. Mech Engr—Feb. 21, 1913. No. 40318A.

See also Pumping Stations under Civil Engineering, Water Supply; Diesel Engines, Combustion Motors, Internal Combustion Engines and Oil Engines under Marine and Naval Engineering; Internal Combustion Engines under Combustion Motors; Engines under Aeronautics; Engines under Automobiles and under Combustion Motors. Also, Oil Fuel under Marine and Naval Engineering and Oil Engines under Railway Engineering, Motive Power and Equipment.

Producer Gas

The Generation and Distribution of Producer-Gas in South Staffordshire. Herbert Alfred Humphrey. Abstract of a paper read before the Inst. of Civ. Engrs. Explains a scheme for the supply of cheap fuel gas. 3500 w. Enging
—Dec. 13, 1912. No. 38524 A.
See also Fuels, under Steam Engineer-

ing, and Peat, under MINING AND MET-

ALLURGY, Coal and Coke. Thermal Efficiency

Jacket Water Temperatures and Fuel Consumption in Internal Combustion Engines. Reginald Trautschold. Considers the effect of jacket water temperatures upon fuel consumption. 1200 w. Can Engr—June 19, 1913. No. 42990.

Valves

Valve Movements of Explosion Engines. Drawings and descriptions of recent patents. 1200 w. Prac Engr—Jan. 23, 1913. No. 39780 A.

See also Slide Valves, under Automobiles.

HEATING AND COOLING

Acoustics

Air Currents and their relation to the Acoustical Properties of Auditoriums. F. R. Watson. An account of experiments with application of the conclusions to ventilating systems. 5500 w. Eng Rec-March 8, 1913. No. 40369.

Air Conditioning

Humidity and House Sanitation Explained. Observations on tests conducted to discover effects of varying degrees of temperature and humidity on health. 3000 w. Met Work—Jan. 24, 1913. No. 39312.

Air Cooling

HEATING AND COOLING

Costs

Temperature and Humidity in Factories. C. E. Winslow. Discusses methods of regulating temperature and air supply and control of humidity in factory installations. 3000 w. Met Work-Jan. 24, 1913. No. 39313.

The Relations between the Physical,

Physiological and Psychological Aspects of Warming and Ventilation. Arthur H. Barker. Abstract of paper read before the Inst. of San. Engrs. 2500 w. Archt, Lond—April 11, 1913. Serial. 1st part.

No. 41372 A

Air Conditioning. Shows its application to the industries and considers re-

March, 1913. No. 41575 C.

Regulating the Air Conditions in a Glove Steaming Room. Explains the solution of a difficult problem in a Brooklyn, N. Y., Factory. Ills. 1000 w. Heat & Vent Mag—April, 1913. No. 41282. See also Sanitation, under CIVIL En-

GINEERING, Municipal.

Air Cooling Air-Cooled Jacketing in Hollow Walls by Electric Fans. J. W. Meares. Abstract of a paper read before the Calcutta Sec. of the Inst. of Elec. Engrs. gestions for mitigating living conditions in the new buildings at Delhi, India. 1700 w. Elect'n, Lond-Aug. 1, 1913. No. 44308 A.

Air Dryers

Modern Evaporators (Moderni essiccatoi). Francesco Mauro. General discussion on the uses of cooled dry air, especially in refrigeration. Serial, 1st part. 2800 w. Sept. 7, 1913. No. 45369 D. Diagrams. Industria-

Air Ducts

The Design of Air Ducts. L. A. Hard-Gives new charts, based on a lower coefficient of friction as determined by

& Vent Mag—April, 1913. No. 41283.
Loss of Pressure Due to Elbows in Air Ducts. Frank L. Busey. Read before the Am. Soc. of Heat & Vent Engrs. Gives results of experiments to discover effect of different types of elbows in reducing air pressure in ducts. 2200 w. Met Work—Aug. 15, 1913. No. 44435.

See also Dust Collecting, and Ventilating, under Heating and Cooling.

Air Washing

Air Washing as a Means of Obtaining Clean Air in Buildings. George C. Whipple and Melville C. Whipple. Tests showing possibilities in washing and re-circulating indoor air. 4000 w. Heat & Vent Mag—Sept., 1913. No. 45178.

Buildings

Heating and Ventilating Equipment, and Other Mechanical Appliances in the

New Vienna Bank Co. Building (Die Heizungs- und Lüftungsanlagen und einige andere technische Einrichtungen im Neubau des Wiener Bank-Vereines). Arnold Steiner. Description of entire installation. Ills. 2500 w. Zeit des Oest Ing u Arch Ver—March 28, 1913. No. 41474 D.

Central Heating

The Distribution of Central Heating Plants in Towns (Distribution centrale du chauffage dans les villes). A review of practice adopted in America and Europe. ₹500 w. Tech Mod-Feb. 1, 1913. No. 40066 D.

See also Combination Stations, under ELECTRICAL ENGINEERING, Generating Stations.

Central Plants

Central Heating in Cities (Die zentrale Beheizung der Städte). H. Strache. A study of the question considering the use of coal gas. 3800 w. Feuerungs—June 1, 1913. No. 43034 D.

Central Stations

Economics of Central Station Heating. Byron T. Gifford. (Abstract.) siders briefly the production of the heat units; the distribution, and the making the service attractive. 1800 w. Jour Am Soc of Mech Engrs-Sept., 1913. No. 45419 D.

Cold Storage

Cold Storage and Precooling Fruit. J. L. Hughes. Account of experience in cold storage of strawberries, fruit seeds, nuts, peaches, and apples. 1500 w. Ice & Refrig—May, 1913. No. 41891 C.

Combination Plant

Combination Heating in a Large Resi-Describes features of heating system employing warm air and hot water in a 22-room residence. Ills. 1800 Met Work-Jan. 3, 1913. No. 38748. Combustion Heating

Features of Combustion Heating in Residence. Illustrates and describes a carefully designed combination warm-air and hot-water system. 3000 w. Met Work—June 6, 1913. No. 42673.

Condensing Plants

Condensing Plants for Large Commer-Ira N. Evans. Explains cial Buildings. the system which can be applied to any height of building. 1500 w. Power—Jan. 21, 1913. No. 39241.

Costs

Expense of Operating Heating and Ventilating Plants. H. M. Hart. Studies for computing costs in advance of construction in residences, apartment buildings, schools and office buildings, with typical examples. 3600 w. Proc Am Soc Heat & Vent Engrs—July, 1913. No. 43594 N.

Country Houses

HEATING AND COOLING

Fans

Country Houses

Heating and Plumbing in Country ome. Illustrated description of a direct and indirect hot-water heating and independent water supply and sewage disposal plants. 2500 w. June 27, 1913. No. 43230. Met Work-

Department Store

Heating and Ventilating Bonwit-Teller Bldg. Drawing and detailed description of the plant. 1200 w. Dom Engag—March 29, 1913. No. 40946.

District Heating
District Heating by Steam and Hot
Water. L. B. Lent. Discusses cost of the two systems and when each is preferable. Gives calculations for sizes of mains and other details. 2500 w. Power-April 29, 1913. No. 41681.

District Steam Heating with High Pressure Steam. Frederick W. Ballard. Aims to show that the advantages incident to low-pressure steam heating from isolated plants will not be found if the isolated plants will not be found if the distribution is extended over a wide range of territory. Ills. 2500 w. Jour Ohio Soc of Mech, Elec, & Steam Engrs—May, 1913. No. 42446 N.

The Design of Central Heating Systems. A. G. Christie. Considers the advantage of the central heating plant its natility leasting design at a 5500 W.

its utility, location, design, etc. 5500 w. Can Engr—July 17, 1913. Serial, 1st part. No. 43824.

Draft

Forced Draft Control at Ritz-Carlton Charles A. Fuller. Illustrated description of the forced draft system installed. 1700 w. Power-Nov. 12, 1912. No. 37376.

Dust Collecting

Specifications for Dust Collecting Systems. Information of a design required by labor law in New York State, with recommendations. 2500 w. Met Work— April 4, 1913. No. 41083.

Electrical Heaters

The Construction of Electrical Heaters. H. O. Swoboda. Illustrates and describes types utilizing the four different ways of changing electricity into heat. 2500 w. Elec Jour—April, 1913. No. 41214.

Electrical Heating

Electrical Heating. Discusses efficiency as applied to electric heating, and the meaning of an ideal heating system, giving report of a test made of a luminous electric radiator. 2000 w. Elec Rev, Lond—June 13, 1913. No. 43129 A.

Efficiency and Cost of Electrical Heat-g. H. O. Swoboda. Third and concluding article of a series. Considers the four methods of carrying the electrically generated heat to the point where it is

2500 w. Elec Jour-July, required. 1913. No. 43808.

Electric Heaters in Mechanical Con-(Elektrische Heizung Maschinenbau). W. Schulz. General description of types of heating surfaces adopted for domestic and factory purposes. Ills. 5000 w. Zeit des Ver deutscher Ing-July 12, 1913. No. 44648 D.

Exhaust Steam

Cost of Exhaust Steam Heating. Ira N. Evans. Shows how more power can be obtained from the same amount of steam before utilizing it in the heating system. 5000 w. Power-Nov. 26, 1912. No. 87785.

Factories

An Unusual Factory Heating Installa-E. Morris Lloyd. Illustrated description of an installation in the De Laval Separator Co.'s factory at Poughkeepsie, N. Y. 1200 w. Dom Engng— Jan. 18, 1913. No. 89209.

Factory Heating
Operating Economies in Heating Large
Factory Buildings. Edward L. Wilder.
Directions for the economical operation of heating systems. 1500 w. Heat & Vent Mag—July, 1913. No. 43994.

Size, Capacity and Power Required for Centrifugal Fans. Frank B. Gilbert, Jr. Diagrams for determining power are given and charts that give the capacity when other factors are known. 500 w. Power

—Jan. 21, 1913. No. 39238.

Comparative Tests of Three Types of Turbine-Driven Forced Draft Fans. W. J. A. London. Report of tests carried out at Hartford, Conn., to determine the relative efficiency of three distinctive types of fans when combined with a standard Terry vertical turbine. Ills. 1700 w. Jour Am Soc of Naw Engre. 1700 w. Jour Am Soc of Nav Engrs-Nov., 1912. No. 38294 H.

Turbine-Driven Forced-Draft Fans. Henry F. Schmidt. Discussion of "Comparative Tests of Three Types of Turbine-Driven Forced-Draft Fans," by W. J. A. London. Ills. 2000 w. Jour Am Soc of Nav Engrs—Feb., 1913. No. 40861 H.

Facts and Theories Relating to Fans. David M. Mowat. Methods of testing exhaust fans and of calculating efficiencies. 7500 w. Col Engr—March, 1913. No.

40276 C.

Power Requirements of Fans, Blowers and Exhausters. C. W. Drake. Gives an outline of various types of apparatus for moving air and a brief description of the characteristics, uses, and limitations of each. Ills. 2500 w. Elec Jour-March, 1913. No. 40871.

Fan Testing

HEATING AND COOLING

Heating Systems

See also Electric Drive, under Power and Transmission.

Measurement of Air in Fan Work. Discussion of Charles H. Treat's paper. 1500 w. Jour Am Soc of Mech Engrs-April, 1913. No. 41301 D.

Foundries

Foundry Heating and Ventilation. W. H. Carrier. From a paper read before the Am. Found. Assn. Discusses the points to be considered in solving the problem. Ills. 1800 w. Ir Age—Nov. 21, 1912. No. 37724 C.

The Heating and Ventilation of the bundry. W. H. Carrier. Discusses conditions and the features governing the design and selection of the foundry heating and ventilating system.

2000 w. Am Found Assn. Dec. Ills. Am Found Assn-Dec., 1912. No. 38612 N.

Gas Fires

Study of the "Shadowgraph" Test for Gas Fires. W. J. A. Butterfield. Reports invstigation of this method of testing the ventilation of gas fires. 5000 w. Gas Wld—Nov. 30, 1912. No. 38110 A. Recent Progress in Gas Fire Science.

H. James Yates. Abstract of paper read before the British Assn. Reviews the evolution of the modern gas fire and discusses the problem of radiation. 1800 w. Archt, Lond—Oct. 3, 1913. No. 45881 A.

Gas Heating

The Hygienic Aspects of Gas for Heating and Lighting in Home, School and Workshop. Vivian B. Lewes. Lecture before the British Commercial Gas Assn. Aims to show that coal gas as now used is hygienic and efficient. 6000 w. Pl & Dec—Nov. 1, 1912. No. 37624 A.

The Possibilities of House Heating by Artificial Gas as a Fuel. A. F. Krippner. Gives results of experiments, investigations, and observations made in St. Louis. 3500 w. Am Gas Lgt Jour—Feb. 10, 1913. No. 39734.

Notes on "Gaseous Heating." E. W.

Smith and C. M. Walter. Abstracts of a paper read before the Inst. of Gas Engrs. Discusses the quality of gas best suited for use in heating processes. 4000 w. Mech Engr—June 20, 1913. Serial, 1st part. No. 43378 A.

Coal Gas as a Fuel for Domestic Purposes. F. W. Goodenough. Cantor lecture. Discusses gas as a fuel for the heating of homes. Ills. 8500 w. Jour Soc of Arts-Aug. 15, 1913.

44702 A.

Greenhouses Heating Three Small Greenhouses. N. S. Arthur. Describes heating equipment designed to maintain different temperature in greenhouses and hotbeds erected at different times. 2200 w. Met Work -Sept. 5, 1913. No. 44946.

Heat Economy

Methods of Economizing Heat. Charles R. Darling. Discusses mainly the methods at present in use for economizing heat, and the directions in which future improvements may be expected. 5000 w. Jour Soc of Arts-Jan. 3, 1913. Serial. 1st part. No. 39131 A.

Heaters

Elliott Vertical and Horizontal Heaters. Illustrated description. 2200 w. Power -Aug. 26, 1913. No. 44584.

Heating Problems

Graphical Solutions of Heating Prob-lems. H. J. Thorkelson. Gives a diagram and a circular slide rule, explaining their use. 700 w. Wis Engr-Nov., 1912. No. 38565 C.

Heating Systems

The Hot-Panel and Hot-Floor Border System of Heating. H. Riall Sankey. Read before the Jr Inst of Engrs. Describes an application of this system. Ills. 3300 w. 39480 A. Engng-Jan. 17, 1913.

Hot Panel and Floor Border System of Heating. H. Riall Sankey. Read before the Jun. Inst. of Engrs, England. Describes a system originally devised by

A. H. Barker, which gave satisfactory results. Diagrams. 4000 w. Met Work—Feb. 28, 1913. No. 40225.

Hot Panel and Hot Floor Border System of Heating. H. Riall Sankey. From a paper before the Jun. Inst. of Engrs. London. Information concerning the effectiveness of this system, describing an installation. Ills. 3000 w. Heat & Vent Mag.—May, 1913. No. 42428. Time Analysis in Starting Heating Apparatus. Ralph C. Haggart. A study

of boiler performance curves in relation to the final room temperatures from given initial temperatures. 5000 w. Proc Am Soc of Heat & Vent Engrs—July, No. 43593 N.

High-Pressure Steam Heating vs. Hot Water By-Product Plant. Ira N. Evans. Discusses the financial possibilities of a vacuum hot water heating system. 4000 w. Power—July 29, 1913. No. 43949. Erecting Heating Systems Without

Plans. Describes a system which enables a fitter to prepare piping at shop ready for erection. 1800 w. Met Work—July 4, 1913. No. 48432.

Physical Action of Steam and Forced Hot-Water Heating Systems. Ira N. Evans. A discussion generally favoring the hot-water system. 3000 w. Power— Aug. 12, 1913. No. 44295.

HEATING AND COOLING

Humidity

Elements of Heating. E. N. Irwin. Discusses heating by air, water, and steam. 2000 w. Power—Oct. 7, 1913. No. 45704.

Heat Transmission

A Technical Research on the Conductivity of Plate-Shaped Materials (Ein Technisches Verfahren zur Ermittlung der Wärmeleitfähigkeit plattenförmiger Stoffe). Richard Poensgen. The results of laboratory tests on flat insulating material of various sorts. Ills. 3600 w.

Die Kälte Ind—Feb., 1913. No. 40515 D. Heat Transmission With Pipe Coils and Cast-Iron Heaters under Fan Blast Conditions. L. C. Soule. A series of four-teen tests made at the Institute of Thermal Research of the American Radiator Co. Ills. 5100 w. Proc Am Soc Heat & Vent Engrs—July, 1913. No. 43598 N.

The Transmission of Heat Between a Fluid in Motion and a Metallic Surface (La transmission de la chaleur entre un fluide en mouvement et une surface métallique). F. Leprince-Riuquet. A study of the problem of heat exchange between moving gases and surrounding surfaces. Ills. 7000 w. Tech Mod—July 15, 1913. No. 43584 D.

Hospital Plant

The Service Equipment of the Samaritan Hospital, Troy, N. Y. C. F. Herington. Illustrates and describes an example of advanced practice in heating and ventilation. 2500 w. Eng News—July 17, 1913. No. 43837.

Hospitals

Heating and Ventilating in Greenpoint Hospital. Harold L. Alt. Illustrated description of a new hospital in New York State, provided with the most modern equipment. 2000 w. Dom Engng-Aug. 23, 1913. No. 44598.

Hot Air Heating

See also Combination Plant, under Heating and Cooling.

Hot Blast

Hot Blast Heating for an Ice Skating Rink. Describes a heating plant of un-usual interest lately installed in the Win-nipeg Horse Show Amphitheater. Line drawings. 2000 w. Heat & Vent Mag— April, 1913. No. 41281.

Hotels

Mechanical Equipment of Stock Yards Plans and description of the plumbing, heating and refrigeration of this new Chicago hotel. 3000 Dom

Engng—Jan. 11, 1913. No. 38976.

Heating and Ventilating the Hotel McAlpin. Joseph Graham. Illustrated description of the heating and ventilating system installed. 2800 w. Dom Engng —April 5, 1913. No. 41076.

Consult Classification of the Index. See page 9.

Hot-Water Heating

Forced Circulation in Hot-Water Heatrepresentation in not-water heat-ing. Charles L. Hubbard. Describes various systems of piping and devices in-tended to promote fast circulation. Ills. 500 w. Met Work—Jan. 24, 1913. Se-

1st part. No. 39814.

A Unique Formula for the Proper Action of Hot Water Circulation (Formule unique pour le fonctionnement correct des circulations d'eau chaude). L. Rouquaud. An empiricle formula for use in hot water circulating systems. 30 Alliance Industrielle—Jan., 1913. 3000 w. 39075 D.

Drop-Feed Hot-Water Heating System. Illustrates and describes features of an installation in a building covering a large area. 1500 w. Met Work-Feb. 7, 1913. No. 39718.

Heating and Ventilating in Toledo Post-Office. Plans and description of the

hot-water heating installation. 1500 w. Dom Engng—Feb. 15, 1913. No. 39820. The Design of Hot-Water Supply Systems to Minimize Corrosion. F. N. Speller. Gives results of an investigation of present practice and the influence of the arrangement of the piping on corrosion. 1200 w. Eng News-Feb. 13, 1913. No. 39858.

Hot-Water Heating Extra-Ordinary. Illustrates and describes successful work under difficulties. 3500 w. Met Work—June 20, 1913. No. 42963.

See also Combination Plant and District Heating, under Heating and Cooling.

Hot-Water Systems

Output from Hot-Water Distributory Systems (Rendement des Installations de Distribution d'Eau Chaude). G. de Grahl. Calculations on circulation and boiler production. Extracted from Gesundheits-Ingenieur. Diagrams. 10000 w. Rev de

Mecan—Jan., 1913. No. 40589 E + F. Chart for Determining Size of Pipe for Gravity Hot Water Heating Systems. M. S. Cooley. Method of devising such a chart and detailed explanations of its uses. Chart. 4000 w. Proc Am Soc Heat & Vent Engrs—July, 1913. No. 43597 N.

Houses

Heating and Ventilating Apartment Illustrates and describes arrangements in a Fifth Ave. apartment house in New York City. 1500 w. Dom Engng—May 3, 1913. No. 41838.

Humidity

Atmospheric Humidity. John Thompson. Read before the Warwickshire Br. of the Nat. Assn. of Col. Mgrs. Considers means of ascertaining the amount of moisture in the air, effect of humidity,

Humidity Regulator

HEATING AND COOLING

Pre-Cooling

tc. Ills. 3500 w. Ir & Coal Trds Rev -Feb. 14, 1913. No. 40138 A.

Experiments on Humidifying Air at the Oliver Wendell Holmes School, Boston, Charles F. Eveleth. Report of tests that show temperature and humidity must be under close and accurate control. Ills. 3000 w. Heat & Vent Mag—Oct., 1913. No. 46297.

Humidity Regulator
A Humidity Regulator. William M.
Clark. General description of a new device for determining and regulating humidity. Ills. 2000 w. Ice & Refrig —Sept., 1913. No. 44945 C.

Hygiene

The Hygiene of Building. Percy L. Marks. Read before the Inst. of San. Engrs. Considers the site, ventilation, lighting and warming, planning, materials, etc. 3500 w. Plumb & Dec.—Dec. 2, 1912. Serial. 1st part. No. 38286 A.

Ice-Making

The Largest Ice Making Plant. Illustrates and describes details concerning the 1200-ton ice making system of the Anheuser-Busch Brewing Assn. at St. Louis, Mo. 1200 w. Ice & Refrig—Oct., 1913. No. 45900 C.

See also Combination Plants, under ELECTRICAL ENGINEERING, Generating Stations.

Ice Plants

A Typical Modern Absorption System Ice Plant. Illustrated description of machinery and equipment in a plant at Birmingham, Ala. 2000 w. Ice & Refrig— Nov., 1912. No. 37263 C.

Raw Water Can Ice Making Systems. Samuel Sydney. Brief discussion of various systems. 2800 w. Power—Nov. 5.

1912. No. 37275.

New System of Making Clear Can Ice from Raw Water. W. D. Fox. Describes

an improved method. 2000 w. Ice & Refrig—Aug., 1913. No. 44131 C.
Electrically Driven Raw Water Ice-Making Plant. Illustrated description of a plant at Buffalo, N. Y., explaining the advantages of electric drive. 2500 w.

Ice & Refrig—Sept., 1913. No. 44943 C.
Electrically Operated Ice Factory at Ottawa, Canada. Illustrated description of a plant for the manufacture of distilled water ice of the highest quality. 1000 w. Ice & Refrig—Sept., 1913. No. 44944 C.

Electrically Operated Raw Water Ice Plant in Detroit. Illustrated description of two new 75-ton ice factories with record of performance. 2500 w. Ice & Refrig—Sept., 1913. No. 44942 C. See also Combination Plant, under

ELECTRICAL ENGINEERING, Generating

Stations, and Refrigeration, under Heating and Cooling.

Indirect Heating

Operating Cost of Indirect Heating Systems. Frank L. Busey and Willis H. Carrier. Abstract of a paper before the Am. Soc. of Heat. & Vent. Engrs. Aims to show that there is a definite relation between the cost of power and cost of apparatus. 1500 w. Power—March 18, 1913. Serial. 1st part. No. 40690.

Office Buildings

Heating and Ventilation of Office Buildings. Joseph Graham. Illustrates and describes briefly the installation in the U. S. Rubber Co.'s building. 1200 w. Dom Engng—June 7, 1913. No. 42716. Heating and Ventilation of Office Buildings. Joseph Graham. Illustrates

and describes features of the New York Edison Co.'s new building. 1000 Dom Engng—July 5, 1913. No. 43431. 1000 w.

Chart for Determining Size of Pipe for Gravity Hot Water Heating Systems. M. S. Cooley. Gives that and instructions for its use. 1200 w. Heat & Vent Mag—Sept., 1913. No. 45180.

Heating and Ventilating Details of the New York General Post-Office. Describes the equipment of the new structure on Eighth Ave. and 32d St. Ills. 2800 w. Heat & Vent Mag-March, 1913. No. 40877.

Heating a Mammoth Post Office. L. B. Marks and J. E. Woodwell. Illustrates and describes features of the mechanical equipment for heating and ventilating the new terminal post office for Greater New York. 1200 w. Met Work - April 4, 1913. Serial. 1st part. No. 41082.

Practice

Modern Practice in Heating and Ventilation. Alfred G. King. First of a series of articles explaining various phases of this subject. 1700 w. Dom Engng—April

5, 1913. Serial. 1st part. No. 41075. Lecture Course on Elements of Heating. Charles A. Fuller. First lecture of a series covering principles of heating and ventilation in present-day practice. 1000 w. Met Work-March 28, 1913. Serial. 1st part. No. 40941.

Pre-Cooling

Methods of Pre-Cooling Perishable Goods at Loading Stations. B. W. Redfearn. Read before the Cong. of Refrig. Considers the beneficial effects of pre-cooling and the methods. 1400 w. Ry Age Gaz—Sept. 26, 1913. No. 45447.

See also Cold Storage, under Heating

and Cooling.

Public Buildings

HEATING AND COOLING

Refrigeration

Public Buildings

Heating New County Court House at New Haven. Illustrates and describes details of heating and ventilating appliances, including air conditioning and automatic control of some temperatures. 2500 w. Met Work—Jan. 3, 1913. No. 38747.

Steam Loop and Gravity-Return System. J. C. Hawkins. Shows the piping of a steam plant in which the steam loop has taken care of the condensation with good results. 2000 w. Power—June 17, 1913. No. 42861.

Changing a Heating Plant from High to Low Pressure Steam. C. E. Daniell. Describes alterations made. Ills. 1200 w. Heat & Vent Mag—June, 1913. No. 43181.

Radiators

Shunt System of Connecting Radiators. Ira N. Evans. A criticism of articles by L. L. Brewster and by W. L. Durand explaining the action of the shunt system of connecting radiation on hot-water heating apparatus. 1500 w. Power—Oct. 7, 1913. No. 45703.

Refrigeration

Refrigeration by Direct Expansion and Brine Circulation. John Green. Discusses the advantages and disadvantages of the two systems. 1500 w. Power—Nov. 19, 1912. No. 37619.

A Contribution to the Theory of Refrigerating Machines. John H. Grindley. Discusses a new cycle of operations, giving diagrams and tables. 3000 w. Inst of Mech Engrs—Nov. 22, 1912. No. 38135 N.

Refrigeration: Application of CO₂. A. H. Tyler. Summary prepared from a report to the Jun. Inst. of Engrs. 1000 w. Prac Engr—Dec. 12, 1912. Serial. 1st part. No. 38389 A.

Vapor-Compression Refrigerating Machines. J. Wemyss Anderson. Illustrated description of types, their action, applications, etc. 14500 w. Inst of Mech Engrs—Nov. 22, 1912. No. 38131 N.

The Properties of Saturated and Superheated Ammonia. William S. Mosher. Collects the various experimental data on the properties of ammonia, attempting to reconcile these data by means of thermodynamic laws and principles. 8500 w. Jour Am Soc of Mech Engrs—Jan., 1913. No. 39850 D.

Electrical Refrigeration for the Butcher. R. L. Lloyd. Explains its advantages, illustrating and describing mathines and giving data from various plants with such installations. 2000 w.

Elec Rev & W Elect'n—Jan. 11, 1913. No. 38977.

The Ice and Refrigerating Plant of the Marzahna Dairy (Die Eis- und Kühl-Maschinenlage der Dampfmolkerei Marzahna). L. Heyn. Describes plant and its operation. Ills. 1600 w. Kälte-Ind—Dec., 1912. No. 39013 D.

Indicating the Ammonia Compressor. Robert H. Karl. Shows why indicators have an important bearing on the economical operation of ice machines. 2000 w. Ice & Refrig—Feb., 1913. Serial, 1st part. No. 39632 C.

Weighing Ammonia to Determine Refrigerating Capacity. Fred Ophuls. Describes in detail the arrangement and gives table and explanation of its use. 2000 w. Power — Feb. 11, 1913. No. 39759.

Ammonia Total Heat Diagram and Its Applications. H. J. Macintire. Explanation for use of diagram and various applications. 2500 w. Ice & Refrig—Feb., 1913. No. 39629 C.

A Model Ice-Making Plant in Kentucky. Illustrated detailed description of a 50-ton ice-making plant at Dayton, Ky. 2000 w. Ice & Refrig—Feb., 1913. No. 39631 C.

Winter Work in Refrigerating Plant. Fred Ophuls. Remarks referring to a simple steam-driven can ice-making plant, though applicable to other installations. 2500 w. Power—March 25, 1913. No. 40797.

Weight of Gas or Vapor Handled by Compressor. Fred Ophüls. Considers the distinction between volume and weight of a gas pumped into a condenser by a compression machine and the difficulty of computing the weight of gas. Gives formula for computing weight from data given by indicator card. 1700 w. Ice & Refrig—April, 1913. No. 41081 C.

Winter Work in a Refrigerating Plant. Fred Ophüls. Remarks on the operation of an ammonia compressor, the importance of proper lubricating oil, the amount of steam required as affected by suction pressure and condenser pressure, etc. 2200 w. Power — April 22, 1913. No.

Weddel's 25th Yearly Report on the Refrigerated Meat Industry in England and Europe for 1912 (Weddel's 25, Jahresbericht über den Handel mit gefrorenem Fleisch im Jahre 1912 in England und dem Kontinent Europa). Abstract of complete report with tables. Serial. 1st part. 3000 w. Kälte Ind—March, 1913. No. 41433 D.

Air as a Stimulator of Corrosion in Refrigerating Systems. M. B. Smith. Gives results of experiments on the action

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Refrigeration

HEATING AND COOLING

Schools

of brines on metals, showing the increased rate of corrosion due to air-satu-1200 w. Eng News-May 15. 1913. No. 42092.

The New Main Engines of the C. H. Haake Brewing Co. in Bremen (Die neue Maschinen-Zentrale der C. H. Haake-Brauerei A.-G. in Bremen). Georg Göttsche. Details of large ice-making machinery of this plant. Ills. 4400 w. Kälte Ind-April, 1913. No. 42130 D.

The Properties of Saturated and Superheated Ammonia Vapor. G. A. Goodenough and William Earl Mosher. Tables of the properties of saturated ammonia and an extensive table of the properties of superheated ammonia, with a chart by which the usual practical problems of refrigeration may be solved graphically. Univ of Ill, Bul 66—Jan. 27, 1913. No. 42902 N.

Raw Water Ice Plant for Car Icing

Station. Description and view of a plant at Alexandria, Va. 2500 w. Ice and Rfrig—June, 1913. No. 42616 C. Causes for Variation in Quality of Distilled Water Ice. Peter Neff. Explanation of some of the causes. 1200 w. Power-July 22, 1913. No. 43845.

Operating on the Flooded System. R. L. Mossman. Explains some of the advantages of the flooded system over the expansion evaporating system. Ills. 1000 w. Power-July 22, 1913. 43846.

Fish Freezing and Storage at Cape Cod. Illustrated general description and views of the fish and bait freezing and cold storage plant at Provincetown, Mass. 1800 w. Ice & Refrig—July, 1913. No. 43455 C.

Handling of Dressed Poultry. M. E. ennington. Illustrates and describes Pennington. modern methods of killing, chilling, packing, storing and shipping poultry for far distant markets. 2200 w. Ice & Refrig —July, 1913. No. 43456 C.

Refrigeration in Argentina. H. G. Cutler. Illustrated description meat freezing plants, ice factories and allied industries. 2500 w. Ice & Refrig—July, 1913. No. 43457 C.

Figuring Power for Refrigerating Plants. Samuel Sydney. Explanation of the various factors to be considered. 2000 w. Power-Aug. 5, 1913. 44154.

Corrosion in Refrigerating Systems. Morgan B. Smith. Discusses corrosion due to galvanic ation, and gives combinations which work out well in practice. Power-Aug. 16, 1913. 2000 w. No. 44441.

Mechanical Refrigeration and Ice

Making from a Central Station Point of View. E. F. Tweedy. Shows the opportunity offered by this power used in the building up of the yearly load-factor of a central station. 6000 w. Gen Elec Rev-Aug., 1913. No. 44089 C.

Apparatus. Reversible Absorption Translation from the German, describing a new arrangement of ammonia absorption refrigerating machinery based on the Lorenz "polytropic" cycle. 2500 w. Ice & Refrig—Aug., 1913. No. 44132 C.

Organization for Handling Refrigeration Transportation. J. S. Leeds. Discusses some of the features which such an organization should embrace. 2500 w. Ry Age Gaz—Sept. 26, 1918. No. 45448.

The Development of Refrigerating Industries in the United States (Le développement des industries frigerifiques aux Etats-Unis). E. Gouault. Review of the ramifications of the ice and refrigerating industry and its industrial importance. Ills. Serial, 1st part. 3400 w. Genie Civil—Aug. 2, 1913. No. 45346 D.

Comparative Installation and Operating Costs of a Combined Ice-Manufacturing and Cold-Storage Plant. R. H. Tait and L. C. Nordmeyer. The basis of comparison is a plant having 60 tons capacity of ice per day of 24 hr. and cold-storage capacity of 100000 cu. ft. 1500 w. Power—Oct. 28, 1913. No. 46214.

Indicating the Compressor. Peter Neff. A study of diagrams and suggestions for indicating. 2500 w. Power—Oct. 14, 1913. No. 45816.

See also Engine Diagrams, under Steam Engineering.

School Hygiene

Hygienic Equipment of a High School. First of three articles describing remarkably complete heating, ventilating, air-conditioning, vacuum cleaning, and re-frigerating systems in the West Philadelphia High School. Ills. 1800 w. Met Work—March 7, 1913. Serial. 1st part. No. 40360.

Schools

The Heating, Ventilating and Plumbing System in the Heiligenberg und Winterthur (Die Heizung, Lüftung und Badeeinrichtung im Heiligenbergschulhaus in Winterthur). M. Hottinger. Description of system adopted. Ills. 2400 System in the Heiligenberg School in scription of system adopted. Ills. 2400 w. Zeitschr des Ver deutscher Ing—Sept. 28. 1912. No. 87446 D.

Public School Heating and Ventilating. Describes the system in public school No. 46, New York City, as an example of

modern methods. 8500 w. Dom Engng

modern methods. 3500 w. Dom Engng
—Dec. 14, 1912. No. 38205.

Heating and Ventilation of Mount
Vernon High School. Ira N. Evans. Illustrated description of the equipment
as designed for a new building. 3000 w.
Power—Dec. 24, 1912. No. 38360.

Plumbing, Heating, and Ventilating in
the Albany High School. H. L. Alt. Illustrated detailed description. 5000 w.

lustrated detailed description. 5000 w. No. 38687.

Dom Engng—Dec. 28, 1912. No. 38687. Sheet Metal Duct Work in Waco High Illustrates and describes struc-School. tural details and design of fan connections, warm air and ventilating ducts. 2000 w. Met Work—Jan. 3, 1913. No. 38749.

Heating and Ventilating Equipment of the Newark Normal School. Newark. N. J. Brief illustrated description of the steam supply, fresh air system, exhaust system, etc. 900 w. Heat & Vent Mag—May, 1913. No. 42429.

See also Ventilation, under Heating and Cooling.

School Ventilation

Experiment in Schoolroom Ventilation with Reduced Air Supply Through Individual Ducts. Frederick Bass. An account of experiments conducted in the Jackson school in Minneapolis, including physiological and psychological tests. Ills. 9600 w. Proc Am Soc Heat & Vent Engrs—July, 1918. No. 43595 N.

Shop Systems

Heat and Ventilation in a Large Foundry. Illustrates and describes a fan system with air recirculating arrangements. 1200 w. Ir Age — Feb. 13, 1913. No. 39837 C.

Heating and Ventilating Equipment of Mammoth Automobile Factory. Illustrated detailed description of the provisions for supplying 83,000,000 cu. ft. of tempered and filtered air per hour. 2500 w. Met Work—Jan. 31, 1913. No. 39568.

Steam

See Exhaust Steam, under Heating and Cooling.

Steam Heating

Cast-Iron Boiler Heating Plant in Sky-Scraper. Illustrates and describes an unusual example of steam heating in a 16story building with cast-iron boilers of 200 h. p. rating. 1200 w. Met Work—Jan. 8, 1918. No. 38746.

Some Troubles of Steam Heating Systems. Charles H. Bromley. Discusses vacuum troubles, air-bound coils, air and diaphragm troubles, etc. 2000 w. Power
—April 15, 1918. No. 41210.

See also District Heating, under Heat-

ing and Cooling.

Temperature Control

Automatic Temperature Control in Heating and Ventilating Systems. De-scribes appliances for automatic regulation, explaining their operation. 1000 w. Builder—Sept. 26, 1913. Serial, 1st part. No. 45725 A.

Temperature Regulators
Automatic Temperature Regulation Discussed. Joseph Graham. Considers the saving effected by temperature control apparatus, illustrating and describ-ing the Johnson system. 1600 w. Dom Engng—Sept. 6, 1913. Serial, 1st part. No. 44963.

Vacuum Heating
Heating and Ventilating Large Buildings. Charles L. Hubbard. Illustrated detailed description of equipment for vacuum heating. 1500 w. Prac Engr, Chicago—Aug. 15, 1913. Serial, 1st part. No. 44421.

Ventilation

A Symposium on Ventilation. full papers and other abstracts of papers read at the Int. Cong. on Hygiene and Demography. D. D. Kimball, C-E. A. Winslow, Y. Henderson and F. S. Lee. Discusses why we should ventilate. 12500 w. Eng News—Nov. 28, 1912. No. 37989.

The Effect of Humidity, Temperature and Barometric Pressure on the Blood-Pressure. B. Raymond Hoobler. Presents facts bearing on this subject, de-

vent Mag—Jan., 1913. No. 39538.

High Standard for Gymnasium Ventilation. Illustrated description of ventilation equipment designed to reproduce the freshness of out-door air conditions. 3500 w. Met Work—Jan. 17, 1913. No. 39207.

Proper Openings for a Ventilating Plant, and the Efficiency of Ventilators (Die gleichwertige Oeffnung einer Lüft-anlage und die Kennlinien eines Ventilators). M. Kloss. Theoretical discussion with experiments at several plants. Curves. 5500 w. Zeit des Ver deutscher Ing—Dec. 28, 1912. No. 39044 D. Ventilation Equipment of Ritz-Carlton

Illustrated detailed description. 600 w. Dom Engng-Feb. 8, 1913. No. 39760.

Downward Ventilation in a Rockford, Ill., School House. Clinton E. Beery. A report of comparative observations on rooms heated and ventilated by the new, and the regulations, methods, under the same conditions. Ills. 2500 w. Heat &

Vent Mag—March, 1913. No. 40878.
Discussion on Principles of Ventilation. Dr. E. Vernon Hill. Considers

Ventilation

HYDRAULIC MACHINERY

Centrifugal Pumps

modern ideas and describes a system designed to produce intermittent breeze effects. 3500 w. Met Work — May 16, 1913. No. 42083

1913. No. 42083.

Loss of Pressure Due to Elbows in the Transmission of Air Through Pipes or Ducts. Frank L. Busey. Results of a series of experiments at the testing plant of the Buffalo Forge Co., considering changes in radius of the elbow, and reductions in the throat of the elbow to the blast area. Ills. 3500 w. Proc Am Soc Heat & Vent Engrs—July, 1913. No. 43596 N.

Ventilation System of Hotel McAlpin. Illustrated description of the provisions for supplying an abundance of filtered air. 2500 w. Met Work—July 25, 1913. Serial, 1st part. No. 43850.

Experiments in School Room Ventilation with Reduced Air Supply Through

Experiments in School Room Ventilation with Reduced Air Supply Through Individual Ducts. Frederic Bass. Describes experiments, attempting to control the quality of the air and to so distribute it that each occupant would be conscious of its movement. Ills. 3500 w. Heat & Vent Mag—Aug., 1913. No. 44511.

School Ventilation in New York City. G. E. A. Winslow. Reports actual tests

School Ventilation in New York City. G. E. A. Winslow. Reports actual tests in 32 school buildings with varying equipment. 4500 w. Heat & Vent Mag—Sept., 1913. No. 45179.

The Primary Physiological Purpose of Ventilation. Theodore Hough. Considers it of first importance to facilitate the maintenance of the constant temperature

of the body. 4000 w. Heat & Vent Mag.—Sept., 1913. No. 45181.

Ventilation Standards and Ventilation Methods. R. C. Carpenter. Explains the problems entering into the work of proper ventilation, discussing the requirements and related subjects. 4000 w. Jour Assn of Engng Socs—Sept., 1918. No. 45458 C.

Ventilation of Steam Turbine Engine Rooms. Edgar Knowlton. Cites the growth of typical plants and shows how imperative it is that attention be given to the ventilation of the engine room. Describes the most approved methods. 4000 w. Gen Elec Rev—Sept., 1913. No. 44830 C.

Ozone in Ventilation. Milton W. Franklin. Gives history of experiments in connection with expired air, the importance of offensive odors as contaminating factors, considers ozone should not supplant ventilation but be used as an accessory. 3000 w. Heat & Vent Mag—Oct., 1913. No. 46300.

Ventilation and Recirculation. Dr. Luther H. Gulick. Explains the ways in which air serves the body, advocates the recirculation, and considers the condition of the air. 2000 w. Heat & Vent. Mag—Oct., 1913. No. 46298.

See also Acoustics, Fans, Houses and Schools, under Heating and Cooling; also Exhaust Systems, under Machine Work and Foundries. See also Ventilation, under Marine and Naval Engineering and under Mining and Metallurgy, Coal and Coke, and Mining.

HYDRAULIC MACHINERY

Accumulators

The Design of Hydraulic Accumulators.

A. Lewis Jenkins. An analysis of plain, differential, steam-hydraulic, and hydropneumatic accumulators. Ills. 3000 w. Am Mach—Jan. 9, 1913. No. 38942.

Air Lifts

The "Air Lift System." F. W. Schmidt. Illustrated explanation. 1500 w. Yale Sci M—Jan., 1913. No. 39505 C.

Air Lift Pumping. Charles A. Hirschberg. Considers the points of merit of this system, its uses, describes a test, and various plants. Ills. 3500 w. Compressed Air—May, 1913. No. 42420.

High-Duty Air-Lift Water Plant. C.
F. Ivins. Illustrated discussion of the

High-Duty Air-Lift water Flant. C. F. Ivins. Illustrated discussion of the system with results of a practical test. 3000 w. Prac Engr, Chicago—Oct. 15, 1913. No. 45885.

Air Pumps

Comparative Tests on Water-Jet Air Pumps (Vergleichende Untersuchungen an Wasserstrahl-Luftpumpen). Herr Grunewald. Efficiency comparison of nine types. Ills. Serial. 1st part. 3000 w. Zeitschr des Ver deutscher Ing —Dec. 7, 1912. No. 39032 D.

Researches on the Conditions of Flow in the Ascending Pipes of Compressed-Air Water Lifts (Untersuchungen über die Strömmungsvorgänge im Steigrohr eines Druckluftwasserhebers). K. Hoefer. A study of the principles of air pumps. Ills. 7000 w. Zeit des Ver deutscher Ing—July 26, 1913. No. 44656 D. The Gaede Molecular Air-Pump. Illus-

The Gaede Molecular Air-Pump. Illustrated description of a novel rotary pump, explaining its working. 2500 w. Engng—Sept. 19, 1913. No. 45568 A.

See also Condensers, under Steam Engineering.

Centrifugal Pumps

Some Features of Modern Centrifugal Pump Installations. Describes piping and valve arrangements by means of

which two or more centrifugal pumps may be operated singly, in parallel, or in series. Ills. 1500 w. Engng & Con—Nov. 20, 1912. No. 37702.

Centrifugal Pump Specifications. Chas. A. Carpenter. Shows the importance of stating the service conditions the pump is expected to meet. 1500 w. Engineering Magazine—Dec., 1912. No. 37790 B.

is expected to meet. 1500 w. Engineering Magazine—Dec., 1912. No. 37790 B. Reliability in High-Lift Centrifugal Pumps. W. E. W. Millington. Read before the Manchester Assn. of Engrs. Deals with points which aim at securing reliability in the design, installation and running of this type of pump. Ills. 6000 w. Mech Engr.—Nov. 1, 1912. No. 37394 A.

Test of a Worthington Centrifugal Turbine-Driven Feed Pump at the Naval Engineering Experiment Station, Annapolis, Maryland. Illustrated description of the machine, with account of test made to determine the general performance. 7000 w. Jour Am Soc of Nav Engrs—Nov., 1912. No. 38299 H.

Calculations on Centrifugal Pumps (Berekening van de centrifugaalpomp). P. F. A. von Wolzogen Kühr. Mathematical discussion. Diagrams. 5500 w. De Ingenieur—Nov. 9, 1912. No. 38475 D.

Ingenieur—Nov. 9, 1912. No. 38475 D.
Operating Conditions in Centrifugal
Pumps (Darstellung der Betriebsvorgänge bei Kreiselpumpen). H. A. Janssen. Curve diagrams illustrating the action of the pumps. 4000 w. Zeitschr des
Ver deutscher Ing—Nov. 23, 1912. No.
38450 D.

A New Design of Centrifugal Dredging Pump. H. S. New. Illustrates and describes a dredging pump with volute runner and renewable parts. 1700 w. Eng News—Jan. 2, 1913. No. 38781.

Calculations on Centrifugal Pumps (Berekening van de centrifugaalpomp). F. K. Th. van Iterson. Additional theory suggested by a previous article written by P. F. A. von Wolzogen Kühr. Ills. 1800 w. De Ingenieur—Dec. 7, 1912. No. 39058 D.

High-Pressure Centrifugal Pumps for Fire Engines (Pompes centrifuges à haute pression employées comme pompes à incendie). Description of pumps built by Sulzer Bros. especially adapted to motor fire trucks. Ills. Serial. 1st part. 3600 w. Bull Tech d l Suisse Romande—Jan. 10, 1913. No. 39066 D.

Motor-Driven Centrifugal Pumps. E. C. Wayne. Considers the characteristics of the apparatus, capacity and head, power requirements, types of motors, etc. Ills. 2500 w. Elec Jour-March, 1913. No. 40870.

The Sulzer Bore-Hole Centrifugal Pump

(Die Sulzer-Bohrloch-Kreiselpumpen). Werner Ahrens. Details of pump for deep-well service. Ills. 4200 w. Zeit des Ver deutscher Ing—March 1, 1913. No. 40544 D.

Two-Stage Centrifugal Pump. Illustrated description of a pump made in Manchester, Eng., consisting of a suction cover, a middle body, a delivery cover, and a whirlpool chamber. 1400 w. Engr, Lond—April 25, 1913. No. 41934 A. Flow Conditions in Centrifugal Pumps

Flow Conditions in Centrifugal Pumps (Strömungsverhältnisse in Kreiselpumpen). M. Vidmar. Studies, experiments and formulas for discharge calculations. Diagrams. 3600 w. Serial. 1st part. Zeit f d ges Turbinen—April 10, 1913. No. 42152 D.

Centrifugal Pumps for Irrigation. C. F. Braun. Describes features which make the centrifugal pump a highly efficient and very reliable unit. Ills. 5000 w. W Engng—Aug., 1913. No. 44889 C.

Centrifugal Pumps for Fire Engines on Land and Bilge Duty on Sea (Kreiselpumper im Dienste von Feuerlösch- und Lenzbetrieben zu Lande und zu Wasser). Herr Klanke. Connections and power of these pumps in such service in conjunction with combustion motors. Ills. 1300 w. Motorwagen—June 30, 1913. No. 44663 D.

The Development of Balancing Devices for Centrifugal Pumps. Alex. V. Mueller. Discusses the problem of caring for the axial thrust of shaft, explaining its cause, and describing the devices and arrangements originated. Ills. 3500 w. Eng News—Sept. 11, 1913. No. 45069.

Sulzer Bore-Hole Centrifugal Pumps. Illustrated description of this type and statement of the advantages claimed. 3000 w. Ir & Coal Trds Rev—Aug. 29, 1913. No. 45047 A.

A Study of Centrifugal Pumps (Étude sur les pompes centrifuges). L. Bergeron. The derivation of an equation suitable to the study of all classes of centrifugal pumps. Ills. 5000 w. Tech Mod—Aug. 15, 1913. No. 45337 D.

A New Centrifugal Pump with Helicoidal Impeller. C. V. Kerr. Gives reason for seeking a new type of pump, a brief treatment of the mathematical theory of the new type, and detailed description. Ills. 7000 w. Jour Am Soc of Mech Engrs—Oct., 1913. No. 46141 D.

See also Pumps, under Hydraulic Machinery.

Gas Pumps

A Large Gas Pump Installation. Brief illustrated description of the Chingford reservoir pumping station for the supply

Hydraulic Gears

HYDRAULIC MACHINERY

Pumps

of London. 1500 w. Min & Sci Pr-June 28, 1913. No. 43899.

The Humphrey Pump (Die Humphrey-Pumpe). W. G. Noack. Part 1 discusses the theoretical operation of this gas pump. Diagrams. Serial, 1st part. 6600 w. Zeit des Ver deutcher Ing— June 7, 1913. No. 43524 D.

See same heading, under Combustion Motors.

Hydraulic Gears

10,000-H. P. Fottinger Hydraulic Transmission Gear. Illustrated descrip-Hydraulic tion of an installation put down at the Vulcan Works, Hamburg, to ascertain the efficiency of a high-power machine of the same type. 1000 w. Engng—Dec. 13, 1912. No 38519 A.

Hydraulic Press

Horizontal Hydraulic Cotton Baling Illustrated description of a new type designed by Arthur E. Cummins. 800 w Engr, Lond—Jan. 8, 1913. No. 39170 A.

The Single-Cylinder Hydraulic Forging Press (Ueber die reinhydraulischen einstufigen Schmiedepressen). Wenzel Macka. Continuation of a series of articles begun in 1911, descriptive of the design and operation of one-cylinder presses. Ills. Serial. 1st part. 2200 w. Oest Zeit f Berg Hüttenwesen presses. Ills. Serial. 1s w. Oest Zeit f Berg H Dec. 7, 1912. No. 39002 D.

Hydraulics

Impulses in Circular Flow (Der Energie-Satz der kreisenden Flüssigkeit). Donát Bánki. A study of hydraulic action occurring from the intermittent discharge of turbines, centrifugal pumps, and other discharges. Ills. 4400 w. Zeitschr des Ver deutscher Ing-Jan. 4, 1913. No. 40036 D.

Hydraulic Transmission.

Power Transmission by Oil. R. Douglas-Vickers. Illustrated description of the Hale-Shaw hydraulic transmission system recently developed in England. 2500 w. Horseless Age — April 9, 1913. No. 41159.

Hydrodynamics

The Laws of Flow with Regard to Fluidity and Friction (Die Gesetze der Flüssigkeitsströmung bei Berücksichtigung der Flüssigkeits- und Wandreibung). Victor Kaplan. Graphic studies on hydrody-namic theories. 7000 w. Zeitschr des Ver deutscher Ing—Sept. 28, 1912. No. 37441 D.

Hydrometry

The Royal Italian Hydrometric Testing Station in Santhia, Italy (Die königlich italienische hydrometrische Versuchsanstalt in Santhià. Provinz Novara, Italien). G. Mazzini. The layout and equipment of

the station for experimental work. Ills. Serial, 1st part. 1400 w. Turbine—Sept. 5, 1913. No. 46061 D.

See also Laboratories, under CIVIL EN-GINEERING, Measurement.

Instruction

The Instruction of Hydraulics in Technical High Schools (Ueber den Unterricht in Hydraulik an technischen Hochschulen). Outlines the principles of such instruction. Ills. Serial. 1st 3000 w. Die Turbine-Nov. 20, 1912. No. 88461 D.

Nozzles

Some Suggested Errors in Nozzle Experiments. Discusses suggestions g....in Prof. J. B. Henderson's paper to Inst. of Mich. Engrs. and opinions of other experimenters. 3500 w. Engrg—Jan. 10, 1913. No. 38256 A.

Pipe Fittings
Formulæ for Weights of Cast Tees and Crosses. Gives formulæ for equal and for unequal diameters. Ills. 900 w. Eng Rec-Aug. 30, 1913. No. 44893.

Pumping Engines

Sewage-Pumping Plant for the Melbourne and Metropolitan Board of Works. Illustrated description of a set of tripleexpansion pumping engines of the inverted type. 1000 w. Engng—Nov. 15, 1912. No. 87825 A.

Water Pressure Driven Pumping Engine. Illustrated description of a directacting water-pressure pumping engine for pumping chalk deposits at waterworks near Watford, Eng. 1200 w. Engr, Lond —Jan. 24, 1913. No. 39812 A.

Pumping Machinery Modern Pum Modern Pumping M Drainage of the Fens. Machinery Richard W. Allen. Deals particularly with the vertical steam-engines driving horizontalspindle centrifugal pumps, and the horizontal oil engines. Ills. 3000 w. Inst. of Mech Engrs-July, 1913. No. 44459 N.

Pumping Plant

Diesel Engine Pumping Station at the Gladstone Dock, Liverpool. Illustrated description of a plant remarkable for its size and for having the pumps driven by internal combustion engines. 1600 w. Engng-Sept. 12, 1913. No. 45401 A.

Large Humphrey Pumps for Ching-ford and Egypt. Illustrated detailed de-scription. 2000 w. Engng—Dec. 13, 1912. No. 38518 A.

The Turbine Pump (Le Pompe-Tur-ne). Carlo Solari. Reviews underlybine). ing principles, and construction features of various pumps. Ills. Serial. 1st part. 4800 w. Monit Tec-Nov. 30, 1912. No. 88498 D.

Pumps HYDRAULIC MACHINERY

Booster Pumps. H. E. Cole. Abstract of paper and discussion before the Central States W. Wks. Assn. Considers three kinds of consumption requiring booster service. 3000 w. Can Engr—Jan. 16, 1910. No. 39383.

Some New Types of Centrifugal and Turbine Pumps. Illustrates and describes new types designed for various duties on land and water. 2500 w. Col Guard—Jan. 3, 1918. No. 39153 A.

Modern Electrically-Driven Water Appliances at the Maffei-Schwartzkopff Works (Moderne elektrisch betriebene Wasserhaltungen der Maffei-Schwartzkopff-Werke). Leo Falk--Wildau. Describes high-pressure centrifugal pumps, sinking pumps, etc., to be electrically operated. Ills. 2600 w. Elek Kraft u Bahnen--Dec. 14, 1912. No. 39051 D.

The Humphrey Pumps at Chingford. Gives illustrations showing in detail the arrangement and construction of the plant, with description. Plate. 2500 w. Engng—Feb. 14, 1913. No. 40130 A.

The Oddie "Simplex" Feed-Pumps and Air-Pumps. Illustrates and describes two types of pump fitted with "Simplex" valve-gear. 2500 w. Engng—Jan. 31 1913. No. 39801 A.

The "Stereophagus" Pump. Describes a new pump, designed by R. C. Parsons, which, by means of a knife blade, cuts up solids which are passed into it. Ills. 1100 w. Elect'n, Lond—Jan. 31, 1913. No. 39778 A.

Steam Fire and Salvage Pump. Illustrated description of pumps recently installed on H. M. tug "Dromedary" for use in Portsmouth Harbor. 600 w. Engng—May 9, 1913. No. 42289 A.

in Portsmouth Harbor. 600 w. Engng
—May 9, 1913. No. 42289 A.
Recent Activity in the Explosive Pump
Art. Illustrates and describes recent
patents of interest. 2500 w. Sci Am—
May 31, 1918. No. 42523.

May 31, 1913. No. 42523.

Design and Operating Features of Motor-Driven Pumps. Charles A. Carpenter. Discussion of laws for centrifugal pumps of homologous design with accompanying curves, examples, etc. 1000 w. Elec Wld — June 14, 1913. No. 42842.

Axial Pumps (Ueber Axialpumpen). Herr Wagenbach. Their difference from radial pumps, and a study of the general relation between the number of revolutions, the quantity of water, and the working head. Ills. Serial. 1st part. 2200 w. Zeit f d ges Turbinenwesen—June 10, 1918. No. 43037 D.

The Oddie-Simplex Steam Pump Built by the Odessa Machine Works, Oschersleben (Die Oddie-Simplex-Dampfpumpe der Maschinenfabrik Odesse, Oschersleben). Ernst Preger. Description of the action of this new pump for use with air, water or steam. Ills. 2400 w. Die Turbine—June 5, 1913. No. 43035 D.

Turbine—June 5, 1913. No. 43035 D.
The Theory of Centrifugal Pumps. R.
L. Daugherty. Explains the various divisions of head entering into the operation of a centrifugal pump, and the characteristics of both turbine and volute pumps. Ills. 2500 w. Power—July 15, 1913. No. 43697.

Functions and Design of Air Chambers. Charles G. Richardson. Describes the essential features of properly designed and located air chambers, with suggestions on charging chambers with air. Ills. 2500 w. Power—July 8, 1913. No. 43492.

Turbine Pumps Built by C. H. Jaeger & Co. (Der Turbinenpumpenbau von C. H. Jaeger & Co.). H. Mitter. Illustrated description of the pumps put out by this Leipzig firm, with detailed plans. Serial, 1st part. 3600 w. Zeit des Ver deutscher Ing—June 28, 1913. No. 43533 D.

The Form of Pump Suction Chambers. An account of investigations made at the works of W. H. Allen, Son & Co., Ltd. 1500 w. Engr, Lond—July 25, 1913. No. 44188 A.

See also Pumping Stations, under CIVIL ENGINEERING, Water Supply, and Drainage, under Civil Engineering, Construction.

Reciprocating Pumps

Reciprocating Pump Curves. A. M. Daniels. Description of the construction and use of curves for determining the size of reciprocating pumps required under given conditions. 1200 w. Power—April 8, 1913. No. 41126.

Rivetters

Rivetters or Presses with Hydraulic Levers (Nietmaschine oder Presse mit Druckwasser-Uebersetzung). Herr Brzoska. Operating under slightly different principles from the usual hydraulic press. Ills. 2200 w. Zeit f Werkzeug—Oct. 5. 1912. No. 37463 D.

Turbine Bearings

Thrust Bearings for Vertical Shaft Water Turbines. H. H. Hageman. Considers two general types—one in which the bearing lubricant is under low pressure, and one under high pressure. 1500 w. Sib Jour of Engng—May, 1913. No. 42418 C.

Turbine Blades

The Two-Dimensional Turbine Theory with Particular Reference to Water Friction and its Application and Results on Blade Construction (Die Zweidimensionale Turbinentheorie mit Berücksichtigung

Turbine Discs

HYDRAULIC MACHINERY

Turbines

ler Wasserreibung und deren Anwendung und Ergebnisse bei Schaufelkonstruk-tionen). Victor Kaplan. Methematical discussion. Serial. 1st part. Ills. 4000 Zeit f d Ges Turbinenwesen-Dec. 10. 1912. No. 39046 D.

The Construction of Francis Blades According to the Lorenz Turbine Theory, and Their Characteristics (Die Konstruktion der Francis-Schaufel nach der Lorenzschen Turbinentheorie und Eigenschaften). Herr Bauersfeld. Mathematical considerations of the Lorenz theories of stream flow in turbine wheels. 7100 w. Zeitschr des Ver Diagrams. deutscher Ing—Dec. 21, 1912. No. 89037 D.

Blade Faces of High-Pressure Free-Jet Turbines (Die Schaufelflächen der Hochdruckfreistrahlturbinen). H. Brandisch. Studies on the design of spoon-blades for Pelton wheels. Ills. 1800 w. Zeit f d ges Turbinenwesen—Aug. 20, 1913. No. 46065 D.

Turbine Discs

Distribution of Strains in Rotating Discs of Variable Thickness (Ueber die Berechnung der Spannungsverteilung in rotierenden Scheiben mit veränderlicher Breite). Theodor Pöschl. Mathematical formulae for the determination of necessary thickness in turbine discs. grams. 2000 w. Serial. 1st part. Zeit d ges Turbinenwesen-Feb. 20, 1913. No. 40557 D.

Turbine Intakes

Design and Construction of Concrete Suction pipes (Berechnung und konstruktion von Beton-Saugrohren). Theodor Käch. Formulæ for stream-line intakes. Diagrams. 1200 w. Zeit f d ges Turbinenwesen—Aug. 20, 1913. No. 46066 D.

Turbine Pumps

Axial Thrust in Turbine Pumps and the Methods of Balancing Same. A. E. L. Charlton and L. W. Weil. Describes briefly the origin, nature and effect of axial end thrust in turbine pumps, and discusses the design and application of various balancing devices. Ills. 2000 w. Engng—Aug. 22, 1913. No. 44917 A.

Turbines

10,000 Horse-Power High Pressure Turbines, Biaschina Power Station. Illustrated description of this hydro-electric

Engr, Lond—Nov. 8, 1912. No. 37645 A.
The Water Wheels at Keokuk, Iowa.
Illustrates and describes the 10,000 h. p. single runner Francis turbines with modified scroll case settings molded in solid concrete. Plate. 2500 w. Eng Rec—Nov. 16, 1912. No. 37580. Some Points Relative to the Modern

Hydraulic Turbine (Alcuni argomenti relativi alle moderne turbine idrauliche). G. Belluzzo. A summary of the physical and mechanical constants.

Francis turbine and derived types. Ills.

8600 w. Monit Serial. 1st part. 3600 w. Mo Tecnico—Dec. 30, 1912. No. 39095 D.

Recent Contributions to the Study of "American" and Inward-Flow Turbines (Nouvelle contribution a l'étude des turbines américaines et centripèdes). A study of the Hercules inward-flow turbine as manufactured by the Holyoke Machine Co. Ills. 5500 Rev de Mecan—Nov., 1912. No. 390 No. 39067. \mathbf{E} . $+ \mathbf{F}$.

Hydraulic Turbines with Syphon Intakes (Wasserturbinen mit Hebereinlauf). Fritz Oesterlen. A recent improvement in turbine installation. Ills. Serial. part. 2000 w. Zeit f d ges Turbinen-wesen—Feb. 28, 1913. No. 40555 D.

Some Recently Constructed Turbines (Alcune delle più recenti installazioni di turbine). Details of recent hydraulic turbine installations by A. Riva & C., Milan. Ills. Serial, 1st part. 1500 w. Industria—Jan. 26, 1913. No. 40609 D.

1900-H.P. Water-Turbines for Rio de Janeiro. Illustrated description of turbines recently supplied to the Pirahy power station. 1500 w. Engng—April 11, 1913. No. 41390 A.

Efficiency Test of 6000-H.P. Turbines of the Appalachian Power Company. Report of tests of waterwheels in Development No. 2 on the New River, Virginia, showing them to be remarkably efficient. Ills. 2000 w. Elec Wld—March 29, 1913. No. 40950.

Experiment on the Becher Turbine (Versuche an Becherturbinen). Ernst Reichel and W. Wagenbach. A series of experiments to determine the efficiency of this water-jet turbine. Ills. Serial. 1st part. 3000 w. Zeit des Ver deutscher Ing -March 22, 1913. No. 41461 D.

Turbine Plant for the Carl Zeiss Co. in Jena at Burgau on the Saale (Die Tur-binenanlage der Firma Carl Zeiss in Jena bei Burgau a. d. Saale). V. Gelpe. Details of large hydraulic turbine installations. Ills. Serial. 1st part. 3000 w. Zeit des Ver deutscher Ing—April 12, 1913. No. 42136 D.

Vertical Shaft Single Runner Hydraulic Turbines as Applied to Low Heads.
H. Birchard Taylor. Gives interesting data pertaining to tests. Predicts that in the future the single runner vertical wheel will be used almost exclusively for low heads. Ills. 3500 w. Gen Elec Rev.—June, 1913. No. 42586 C.

A Large High-Speed Turbine (Eine

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Ball Bearings

grosse Schnelläuferturbine). H. Thomas. Description of large hydraulic turbine built for a power plant in Brazil. Ills. 1700 w. Zeit des Ver deutscher Ing—July 12, 1913. No. 44650 D.

Niagara Falls Power Company's New Turbines. Illustrated description of the ten 5500 h. p. waterwheels with 54-inch diameter runners and cylinder gate speed control. 1200 w. Eng Rec-Oct. 18, 1913. No. 45944.

See also Rotary Machines, under Machine Elements and Design.

Turbine Speed

The Choice of Velocity Diagrams for Francis Turbines (Ueber die Wahl der Geschwindigkeitsdiagramme von Francis-Turbinen). K. Körner. Mathematical Turbinen). K. Körner. Mathematical discussion. Diagrams. 4400 w. Zeitschr des Ver deutscher Ing—Oct. 26, 1912. No. 37451 D.

Turbine Wheels

Photographic Studies of a Pelton Wheel (Photographische Untersuchungen an einen Peltonrade). R. Katzmayr. Studies on stream flow characteristics. Ills. 1800 w. Zeit f d ges Turbinenwesen—Jan. 10, 1913. No. 40055 D.

Valves

Electrical Operation of Large Valves (La commande électrique des grandes vannes). H. Gil. Describes several types of electrically-operated valves for watergates, steam ports, etc. Ills. 3600 w. Genie Civil—Aug. 16, 1913. No. 45348 D. Water Ram

An Experience with Water Ram Resulting from the Operation of a Hydraulic Elevator at Northeast Harbor, Maine. From a paper by Charles W. Sherman, before the N. Eng. W. Wks. Assn. Describes physical conditions and explains the cause of the trouble. 1200 w. Engng & Con-Jan. 29, 1913. No. 39582.

Water Wheels Large Water Wheels for Keokuk Power Illustrates and describes the method of molding and casting. 1500 w. Ir Trd Rev—Feb. 13, 1913. No. 39843.

The Turbines of the Keokuk Power Plant. Chester W. Larner. Illustrates and describes the designs, the transporting and erecting problems of the 10,000 h.p. units of the 300000 h.p. development of the Mississippi River. 3000 w. Ir Age
—March 13, 1913. No. 40632 C.
Test of a Steel Overshot Water Wheel.

Illustrated report of C. R. Weidner. tests on a 10-ft. wheel at the hydraulic laboratory of the Univ. of Wisconsin. 2500 w. Eng News—Jan. 2, 1913. No. 38783.

Theory and Test of an Overshot Water Wheel. Carl Robert Weidner. Describes experiments undertaken to obtain information as to performance, and to secure data which would aid in designing a wheel. Ills. 136 pp. Bul Univ of Wis—No. 529. No. 43761 N.

See same heading, and Bearings, under ENGINEERING, Generating ELECTRICAL Stations.

MACHINE ELEMENTS AND DESIGN

Alignment

The Alignment of Machinery. William Sinclair. Read before the Engng. Assn. of N. S. W. Illustrates and describes methods used. 1500 w. Aust Min Stand -July 17, 1913. Serial, 1st part. No. 44471 B.

Lining a 4-Bar Guide. F. W. Bentley, Jr. Describes how to do this accurately with tools improvised in the engine room. Ills. 1800 w. Prac Engr, Chicago—Aug. 15, 1918. No. 44420.

Ball Bearings

Making New Departure Ball-Bearings. Chester L. Lucas. Illustrates and deseribes machining and gaging methods employed in producing the "two-in one" bearing. 3000 w. Mach, N Y—Nov., 1912. No. 37160 C.

The Design of Ball Bearings. Franz J. Jarosch. Prepared for the Soc. of Auto Engrs. Discusses the work of balls and ball raceways in radial and thrust ball bearings with respect to friction and load relations. Ills. 2000 w. Ind Engag— Jan., 1913. Serial. 1st part. No. 38816 C.

The Work of Balls and Ball Raceways in Radial and Thrust Ball Bearings with Respect to Friction and Load Relation. Franz J. Jarosch. Considers the location of ball raceways, the form, the travel of balls in their races, load distribution, permissible loads, etc. Ills. 5500

w. S A E Bul—Nov., 1912. No. 38569 N Ball-Bearing Design. Frederick G. Hughes. Critical review of the paper on "The Work of Balls and Ball Raceways in Radial and Thrust Ball Bearings with Respect to Friction and Load Relations," by Franz J. Jarosch. 4000 w. S A E Bul—April, 1913. No. 42335 N. Ball Bearings—Their Construction and

Application. Considers the advantages of ball bearings and their application on industrial equipment. Ills. 1800 w. Mach, N. Y.—July, 1913. No. 43366 C. Some Historical Notes on the Develop-

ment of the Ball Bearing. An account of

Bearings

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early endeavors to find forms of ball bear-

ings for different purposes. 1500 w. Horseless Age—July 16, 1913. No. 48750. The Manufacture of Balls for Bearings. Thomas J. Heller. Describes methods which produce balls true to within one ten-thousandth of an inch. Ills. 2000 w. Sci Am Sup-Aug. 9, 1913. No. 44217.

Notes on the Use of Ball Bearings in Street Cars (Ein Beitrag zur Verwendung von Kugellagern bei Strassenbahnen). W. Bethge. Results of their use in the axles of some German cars. Ills. 2200 w. Elek Kraft u Bahnen—Aug. 24, 1913. No. 46085 D.

Bearings

Making Annular Bearings. Robert H. Illustrates and describes machinery and methods employed in the manufacture. 2000 w. Mach, N Y-Dec., 1912. No. 37982 C.

Roller and Ball Bearings. John Goodman. Reports an investigation made to find out the load and speed at which such bearings may be allowed to run. Ills. 49 pp. Inst of Civ Engrs—No. 3967. No. 39800 N.

The Testing of Antifriction Bearing-Metals. John Goodman. Report of tests made, methods, apparatus, etc., with discussion and correspondence. 38 pp. Inst

of Civ Engrs—No. 3969. No. 39301 N. High-Speed Bearings. John C. K. Balfry. Read before the Rugby Engng. Soc. Illustrated discussion of bearings and their lubrication, and related topics. 5000 w. Mech. Engr — Feb. 7, 1913. No. 39911 A.

The Use of Roller and Grooved Ball and Roller Bearings in Machine Tools (Emploi des roulements et des coulissements à billes et à galets dans les ma-chines-outils). P. Gorgeu. Illustrates and describes best arrangements. 3000 w. Tech Mod — Jan. 15, 1913. No. 40065 D.

Water Wheel Thrust Bearing. trates and describes a thrust bearing of the oil pressure type, designed by Albert Kingsbury and installed at McCall Ferry hydroelectric plant. 1200 w. Eng Rec-Jan. 11, 1913. No. 38957

A Thrust Bearing for High Unit Pres-Illustrated description of the Kingsbury thrust bearing, designed to distribute the load uniformly and to keep the surfaces separated by a film of oil. 1000 w. Am Mach-March 13, 1913. No. 40424.

The Kingsbury Thrust Bearing. Smith. Illustrates and describes these bearings as fitted on the turbines of the U.S.S. Neptune and report of results. Ills. 3500 w. Jour Am Soc of Nav Engrs—Nov., 1912. No. 38293 H. Ball-Bearing Design. Frederick G. Ball-Bearing Design. Frederick G. Hughes. Discussion of Franz J. Jarosch's paper, questioning deductions set forth. Ills. 2000 w. Horseless Age— May 28, 1913. Serial. 1st part. No. 42631.

Design

Study of Bearing Metals and Testing Methods. T. D. Lynch. Read before the Am. Soc. for Test. Mat. Gives results of an investigation of tin-base and leadbase bearings, with details on melting and pouring babbitt metals. Ills. 2500 Foundry-July, 1913. No. 43415.

The Development of Lathe Headstock Bearings. Hubert Bentley. Illustrates and describes four stages of the develop-1000 w. Mech Wld—June 20, No. 43380 A. ment. 1913.

The Development of Line-Shaft Bear-Hubert Bentley. Discusses one example in each of the four classes of journal bearings. Ills. 1200 w. Mech Wld-Aug. 22, 1913. No. 44913 A.

See also same heading, under Automobiles, and same heading, under STREET AND ELECTRIC RAILWAYS.

Brakes

Differential Compound Band-Coupling (Differential Verbund Bandkupplung). Otto Ohnesorge. A study of band-brakes in machine design. Ills. 2500 w. Zeit des Ver deutscher Ing-June 28, 1918. No. 43535 D.

Came

Dynamics of Gas Engine Cams. M. Terry. Investigates the relative merits of different types of cams. Ills. 6000 w. Mach, N Y—Nov., 1912. Serial. 1st part. No. 87163 C.

The Design of Cams for Flat Face appets. H. B. Heign. Gives a new method for determining the radius of curvature of the inclines of cams for mushroom tappets. Diagrams. 1000 w. Horseless Age—Nov. 27, 1912. 37927.

A Note on Cam Roller Clearances. Discusses the effect a large cam roller clearance has on the engine. Ills. 1200 Engr, Lond — Feb. 28, 1913. No. 40490 A.

Connecting Rods

A Study of the Action of Connecting Rods (Etude du Mouvement d'une Bielle). P. Massot. Mathematical calculations.

Ills. 8000 w. Rev de Mecan—Oct. 31,
1912. No. 87504 E + F.

Design

Appearance in Design as Affected by Function. D. S. Kimball. Calls attention to the relation between mechanical efficiency and mechanical proportions, and

Gears

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the æsthetic quality. Ills. 1200 w. Sib Jour of Engng — June, 1913. No 43184 C.

Dies

Dies for Whiplash Regulator Springs.

A. M. Cahill. Illustrates and describes details of a subpress die for making a difficult watch part. 2000 w. Am Mach—Nov. 28, 1912. No. 37835.

Making a Difficult Blanking Die. R. B. Hainsworth. Illustrates and describes details of an armature disk blanking die. 1200 w. Am Mach—Nov. 21, 1912. No. 87663.

Making Thread Cutting Dies. A number of short papers by different authors presented to Ry. Tool Foremen's Assn. 3000 w. Ry Age Gaz (Mech Ed) —Aug., 1913. No. 44266 C.

Drafting

Management of a Drawing Room. Folbert A. Schmidt. On the importance of suitable environment and fair dealing. 3000 w. Am Engr—Dec., 1912. No. 38203 C.

Drawings

Shading in Mechanical Drawing. Theodore W. Johnson. Presents a new rule for shading. Ills. 1400 w. Jour Am Soc of Mech Engrs — April, 1918. No. 41295 D.

Shading in Mechanical Drawing. Theodore W. Johnson's paper is discussed. 2500 w. Jour Am Soc of Mech Engrs —Aug., 1913. No. 44515 D.

Fillets

The Effects of Fillets on the Strength of Cast Iron Machine Parts. Harry J. Klotz and Paul K. Miles. Reports investigations and results. 1500 w. Technograph—Feb., 1913. No. 41711 C.

Gages

Designs of and Materials for Gages. Lucian L. Haas. Gives a résumé of gages in use in manufacturing establishments, with information relating to the selection of materials, and tables giving dimensions for the various types. Ills. 2000 w. Am Mach—Jan. 23, 1913. No. 39284.

Miscellaneous Manufacturing Gages. L. L. Haas. Examples of a large variety of gages, used for gaging work in course of manufacture and when completed, are illustrated and described. 2500 w. Am Mach—March 13, 1913. No. 40420.

Geer Ratios

Transmission Gear Reduction Ratios. Otto M. Burkhardt. A mathematical discussion of the relative advantages of gear ratios forming a geometric series and an arithmetric series, respectively. 3500 w. Horseless Age—Feb. 12, 1913. No. 39856.

Gears

Making Hindley Worm-Gearing at the Brooklyn Navy Yard. Illustrated description. 1500 w. Mach, N Y—Nov., 1912. No. 37169 C.

Metals and Methods for Worm and Wheel. W. Kerr Thomas. Suggestions and recommendations. 1000 w. Am Mach—Nov. 21, 1912. No. 37667.

Designing a Hob for Hobbing Spur Gears. John Edgar. Explains method of determining the thread shape, number of flutes, and general dimensions. Ills. 1500 w. Mach, N Y—Nov., 1912. No. 37168 C.

Pressure Angle and Form of Thread. Hugh Kerr Thomas. A graphical analysis of worm gear problems. 2000 w. Am Mach—Dec. 5, 1912. No. 38056.

The Rating and Pricing of Speed—Reducing Gear—E. A. Vessey. Gives a chart for ascertaining ratio of speed-educing gears at given horse-powers, explaining its use. 1500 w. Ir & Coal Trds Rev—Dec. 6, 1912. No. 38252 A.

Making Patterns for Machine-Molded Gears. Joseph Horner. Discusses the successful employment of the gear-molding machine. Ills. 2000 w. Foundry—Dec., 1912. No. 37989.

Variable Speed Gear-Driven Counter-Shaft. Illustrated description of an example of nest-gear drive, by means of which ten changes can be obtained instantly, and these can be doubled, if necessary. 500 w. Engng—Dec. 13, 1912. No. 38522 A.

Spiral Gear Design. James H. Carver. Gives formulae for calculating spiral gears with a shaft angle of 45 degrees. Ills. Supplement. 700 w. Mach, N Y—Dec., 1912. Serial. 1st part. No. 37981 C.

Worm Reducing Gears. H. H. Broughton. Explains some of the factors on which satisfactory performance depends. 8000 w. Prac Engr—Nov. 28, 1912. No. 38119 A.

The Cutting and Generation of Gear Teeth by Modern Gear-Cutting Machinery. Vincent Gartside. Read before the Manchester Assn. of Engrs. Considers the different teeth forms in most general use, and their geometrical construction. Ills. 2200 w. Mech Engr—Jan. 17, 1913.

Serial. 1st part. No. 39469 A.

The Measurement of the Teeth of Gears. George W. Burley. Describes the measurement by means of the geartooth caliper, giving formulae and curves. 1000 w. Prac Engr.—Jan. 16, 1913. No. 39387 A.

The Strength of Gear Teeth. Guido

Gears

H. Marx. A record of experiments made to secure data upon the allowable unit fiber stress for cast iron gear teeth when in operation. Ills. 8500 w. Jour Am Soc of Mech Engrs—Jan., 1913. No. 39353 D.

A Practical Form of Tooth for Skew Bevel Gears. George M. Bartlett. Describes a proposed skew bevel gear tooth which can be produced by the molding generating process. 1800 w. Mach, N Y—Jan., 1913. No. 38728 C.

Chart for the Design of Worm Gearing. F. A. Halsey. Data from German and American sources put in form of a chart. 1500 w. Am Mach—Jan. 23, 1918.

No. 39282.

Planetary Gears (Les trains planétaires). P. Laruelle. A study of their theory and application in reducing and increasing speeds in machine tools, motor

wehicles, etc. Diagrams. 7000 w. Rev de Mecan—Nov., 1912. No. 39068 E + F. Charts for Elliptical and T-Shaped Gear Arms. John B. Peddle. Gives charts for determining correct sections of gear arms of elliptical T and double T or cross shape. 800 w. Am Mach-Feb. 13.1913. No. 39840.

Angle for Minimum Centre Distances for Spiral and Worm Gears. T. I. Moncrieff. Gives a new solution of the problem of designing compact spiral gear sets, with a chart. 1400 w. Horseless Age—Feb. 5, 1913. No. 39733. Automobile Bevel Drive Gears. Doug-

las T. Hamilton. Illustrated description of forging operations, machining, heattreating, inspecting and assembling. 5000 w. Mach, N Y—Feb., 1913. No. 39601 C.

The Williams - Janney Variable - Speed Gear. Illustrated detailed description of a successful hydraulic gear of this type. 2500 w. Engng — Jan. 31, 1913. No. 39802 A.

Modern High-Speed Gearing. H. Hubert Thorne. Abstract of paper read before the Rugby Engng. Soc. Discusses the general question of double helical gears, and their application to collieries and rolling mills. Ills. 2500 w. Ir & Coal Trds Rev — March 7, 1913. No.

Turning and Forming Cluster Gears. Henry M. Wood. Brief illustrated description of lathe work in some Cincinnati shops. 700 w. Mach, N Y-March,

1913. No. 40269 C.
Designing and Machining Elliptical Gears. Dent de Fer. Gives experiences in the construction of single-lobe or eccentric gears. Drawings. 1100 w. 1 Wld-March 21, 1913. No. 41010 A.

A Comparison of the Numerical and

Graphical Methods in the Design of Involute Spur Gears. A. Schein. Explains the use of charts in lessening the labor involved in gearing calculations, illustrating by examples. 2500 w. Gen Elec Rev-April, 1913. No. 40994 C.

Modern High-Speed Gearing. H. Hubert Thorne. From a paper read before the Rugby Engng Soc. Considers the advantages of double helical gears and the merits and demerits of the two types. Ills. 2700 w. Mech Wld-April 4, 1913. No.

41231 A.

Spur-Gearing. J. B. M. Knutsen. From a paper read before the Victorian Inst. of Elec. Engrs. Considers the design of the tooth, materials used, etc. 2000 w. Mech. Wld—April 18, 1913. Serial. 1st part. No. 41762 A.

Geometric Studies on Helicoidal Gears (Étude géométrique des engrenages hélicoidaux). P. Massot. A detailed mathematical study. Ills. 53 pp. Rev de Mecan—March 31, 1913. No. 42167

E + F.
A New Hydraulic Transmission Gear. Illustrates and describes a compact, simple device applicable to a wide variety of 1800 w. Ir Age-May 29, 1913. uses. No. 42555 C.

Duplication of Gears Having Long and Short Addenda. E. Winslow Baxter. Compiled with special reference to the conditions in automobile repair shops. 1500 w. Mach, N Y-June, 1913. No. 42571 C.

Eccentric or Differential Gears. H. B. Heign. Explains the principle of the two-gear and the four-gear types, giving formulæ for velocity ratio. Ills. 1500 formulæ for velocity ratio. Ills. 1500 w. Mach, N Y—June, 1913. No. 42575 C. Power Transmitted by Herring-Bone

J. E. Holveck. Gives tables showing the horsepower transmitted by this type of gearing for various pitches in cast iron and cast steel with pitch line velocities ranging from 400 to 2000 feet per minute. 1000 w. Mach, N Y-June, 1913. No. 42574 C.

The Heat Treatment of Gears at the Boston Gear Works. George L. Colburn. Describes apparatus and treatment developed with special reference to gear requirements. Ills. 1500 w. Mach, N Y_June, 1918. No. 42567 C.

Efficiency of Toothed Gearing. W. M. Wallace. Discusses closeness of fit, need for experiment, shape of tooth, etc., in the present number. Ills. 1100 w. the present number. Ills. Prac Engr—July 24, 1913. Serial, 1st part. No. 43984 A.

The Gears of Modern Cranes. Joseph Horner. Discusses the requirements and how they are best fulfilled in the different systems in use. 1000 w. Mech Wld

Gyroscope

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Patterns

July 11, 1913. Serial, 1st part. No. 43898 A.

Tramcar Gear-Wheels and Pinions. Brief discussion of the tool steel process, under which wheels and pinions are treated to ensure long life as compared

with ordinary materials. 1200 w. Elec Rev, Lond—July 18, 1913. No. 43950 A. Hole and Pin Gearing. Laurence Hut-chinson. Discusses this form of gearing and the uses for which it is specially adapted. 1000 w. Prac Engr—Aug. 14,

1913. No. 44506 A.

Standard Involute Gearing. Majority report of the committee on standards for involute gears. Discussion. 5000 w. Jour Am Soc of Mech Engrs—Sept., 1913. No. 45418 D.

A Practical Chart for Determining the Horsepower of Spur Gears. Frederic W. James. Gives a chart for the solution of gear problems, with explanation of its use. 1200 w. Eng News—Oct. 9, 1913. No. 45800.

Tools for Machining Bevel Driving Gears. Albert A. Dowd. Describes in detail the process of forming the blanks for automobile driving gears on a vertical turret lathe and boring of the holes. Ills. 2000 w. Horseless Age-Oct. 22, 1913. No. 46192.

See also Molding and Planers, under Machine Works and Foundries.

Gyroscope

Engineering Applications of the Gyroscope. Elmer A. Sperry. Considers its application to the stabilizing of ships, especially warships; its value in heavierthan-air machines, and various other en-gineering applications. Ills. 7000 w. Jour Fr Inst—May, 1913. No. 42266 D. Gyrostats

Gyrostats and Gyrostatic Action. Prof. Andrew Gray's address at the Royal Institution. An experimental study of mod-Ills. 5000 w. Nature—April 10, 1913. Serial. 1st part. No. 41371 A.

Hooks

The Strength of Hooks and Similar Curved Beams. A mathematical investigation. 2500 w. Engng—Sept. 5, 1913. No. 45152 A.

Interchangeability

Some Indirect Causes of Imperfect Interchangeabilty. A. Whitehead. Explains some of the difficulties. 1500 w. Engng—March 7, 1913. No. 40707 A.

Keys and Keyways for Automobiles. First of two articles showing by illustrations and explaining in a practical manner about the keys used in automobile construction. 1500 w. Automobile— Sept. 4, 1913. Serial, 1st part. 44961.

Saddle Keys. P. J. Haler, and H. T. Wright. Gives results of experimental investigations on a number of keys, describing the apparatus used and the pre-cautions taken. Ills. 1500 w. Mech Wld Oct. 3, 1913. No. 45852 A.

Keyways

Dimensions of Taper Keys and Keyways. G. G. Dana. Explains a method, originated by the writer. Supplement. 1200 w. Mach, N Y—Feb., 1913. No. 39605 C.

Machine Design

The Design of Electrical Machines for Quiet Operation. G. Pontecorvo. Trans. from Elec. Zeit. Discusses magnetic noises, current noise, windage noise and methods of overcoming them, describing some of the difficulties in designing a. c. and d. c. motors, and generators for quiet 2000 w. Elec Jour-Sept., operation. 1913. No. 45102.

Mechanics

Approximate Solutions to Static Indeterminate Problems (Näherungslösungen statisch unbestimmter Probleme). H. Lorenz. Amplifications of the approximate functions of coordinates proposed by W. tz. 2200 w. Zeit des Ver deutscher g—April 5, 1913. No. 41470 D. A Geometric Method for the Ready So-Ritz.

lution of the More Important Equations in Mechanics (Méthode géométrique permettant d'établir simplement plusieurs équations importantes de mécanique). Clauzel. The solution of vectors. Diagrams. 10000 w. Rev de Mecan—Feb. 28, 1913. No. 41514 E + F.

The Principle of Relativity in Mechanics (Het relativiteitsbeginsel in de mechanica). G. J. Van de Well. A review of the principles of theoretical mechanics from the works of early and modern writers. Serial, 1st part. 2000 w. De Ingenieur—Sept. 20, 1913. No. 46098 D.

Models

Model-Room Tools and Methods. Frank B. Lucas. Illustrates and describes devices and methods used. 1200 w. Mach. N Y-Jan., 1913. No. 38726 C.

Pantagraph

A Pantagraph Which Draws on Steel with a Point of Flame. Henry Harrison Suplee. Describes the application of the pantagraph to the manipulation of the oxy-acetylene jet. Ills. 1000 w. Sci Am -Oct. 18, 1913. No. 45918.

Patterns

Designing Patterns to Save in Machine Work. Stuart Dean. Discusses things to be considered in pattern-making to minimize investment in patterns and an unwise amount of machine shop work. Ir Age-Nov. 14, 1912. No. 3500 w. 87754 C.

Valve Gear

Skeleton Patterns on Large Work. N. Johnson. Illustrated description of the economical casting of large turbine casings. 1000 w. Am Mach—Nov. 7, 1912. No. 87299.

On Patternmaking. James Glass. Suggestion for the construction of patterns and improvement of the work. 1000 w. Found Assn—Dec., 1912. 38607 N.

Making a Pattern for a Parsons Steam Turbine. C. A. Tupper. Illustrated dis-cussion of details of the work. 2000 w. Foundry—Dec., 1912. No. 87987.

Suggestions for Pattern Practical Making (Praktische Erfahrungen ausdem Betriebe der Modelltischlerei). Otto Suggestions for the best Lippmann. methods in laying out and making wooden patterns. Ills. 2800 w. Giess-Zeit-Dec. 1, 1912. No. 88426 D.

Patternmaking. T. R. Schofield. From a paper before the British Found. Assn. Discusses in detail the work of the pat-

ternmaker. 1800 w. Mech Wld—Jan. 10, 1913. Serial. 1st part. No. 89354 A. Changing Conditions in the Pattern Shop. Calls attention to changes due to specialization and to improved machin-ery. 1600 w. Mech Wld—Jan. 3, 1918. No. 89150 A.

American Practice in Pattern Making (La pratique américaine du noyautage). H. Marquette Lane. A study of the high development of pattern making in America. 4300 w. Rev de Metall—Aug., 1913. No. 45323 H.

How to Select and Care for Pattern umber. E. F. Lake. Discusses the Lumber. adaptability of the various woods for model-making, calling attention to the value of northern white pine. 3000 w.

Foundry—Oct., 1913. No. 45708 C.
Loose Pieces in Patterns and Coreboxes. Describes methods of attaching loose pattern pieces. Ills. 1500 w. Mech Wld-Sept. 19, 1913. Serial, 1st part. No. 45563 A.

Pattern Shops

The Pattern Shop; With Relation to the Steel Foundry. E. R. Swanson. Considers pattern shop equipment and methods required in making large intricate castings for passenger and locomotive equipment. Ills. 1600 w. Am Found Assn—Oct., 1913. No. 46271 N.

Piston Rings

Rapid Production of Eccentric Piston Rings. Albert A. Dowd. Drawings and description of method used. Ring pots are bored on a multiple spindle and turned eccentrically in a lathe by means of a special expanded arbor. 1200 w. Horseless Age—Oct. 1, 1913. No. 45630.

See also same heading, under Steam Engineering.

Rotary Machines

High-Speed Rotary Machines (Machines rotaries à très grandes vitesses).
Maurice Leblanc. A study of the mechanical action in turbines, compressors and dynamos. Ills. 115 pp. Mem Soc Ing Civ de France — Feb., 1913. No. 42170 G.

Shafte

On Determining Shaft Diameters. G. Dunkley. Gives charts for simplifying the calculations of shafting for combined torsion and bending stresses. 800 w. Mach, N Y-Aug., 1913. No. 44081 C. Springs

A Useful Spring Table. George F. Summers. Table and explanation of its use. 800 w. Am Mach-Nov. 7, 1912. No. 37800.

Reducing Spring Manufacture to a cience. Illustrated description of a physical testing laboratory in Cleveland, O., to facilitate the scientific manufacture of motor vehicle springs. 2000 w. Trd Rev—March 6, 1918. No. 40337.

Methods employed in Leaf Spring anufacture. E. F. Lake. Describes Manufacture. improvements in processes and accuracy in mechanical working and heat treatment. Ills. 3500 w. Ir Age—March 20, 1913. No. 40714 C.

The Forming and Heat Treatment of Leaf Springs. E. F. Lake. Illustrates and describes improved modern methods. 2500 w. Horseless Age—March 12, 1913. No. 40676.

Spring Design. J. St. Vincent Pletts. Develops formulae. 600 w. Engr, Lond July 18, 1913. No. 43973 A.

Slide-Rule for Spring Calculations. Josef G. Dahlstrand. Gives rapid methods of calculation based on Begtrup's formulae. 1000 w. Mach, N. Y.—July, 1913. No. 43362 C.

Helical Spring Calculations. Lawford H. Fry. Diagram, with explanation of the method of using. 2000 w. Engng—Aug. 1, 1913. Serial, 1st part. No. Aug. 1, 1913. 44319 Á.

Heat Treatment of Leaf Springs. E. P. Lake. Discussion of the treatment needed and faults of present methods. 2500 w. S A E Bul—Aug., 1913. No. 45091 N.

See also same heading, under Automobiles.

Valve Gears

A Critical Valve Gear Analysis. George A. Hartman. A comparison of the three types of valve gears most in use, with conclusions. Ills. 2000 w. Ry & Engng Rev—Jan. 11, 1913. No. 39114. The Florian Angelé Valve Gear. Brief

Annealing

review of types of valve gear used, and produces drawings made by Florian Angelé and presented March 8, 1893, showing he was first to patent a link motion. It shows a remarkable anticipation of the present day mechanism. 800 w. E. Lond—Dec. 27, 1912. No. 38904 A.

See also Engine Valves, under Steam Engineering, and Locomotive Valves, under RAILWAY ENGINEERING, Motive Power and Equipment.

Valves

Causes of Failure of Manganese-Bronze Castings for Valves. The pres-ence of dross in the castings is discussed and difficulties from the necessary use of aluminum. 1500 w. Brass Wld—Sept., 1913. No. 45206.

High Speed in Mechanics (Des grandes vitesses en mécanique). Maurice Leblanc, A study of the forces exerted under high velocities. Diagrams. 15000 w. Bul Soc d'Encour—March, 1913. No. 41519 E + F. Worm Gears

Investigation of efficiency of Worm Gearing for Automobile Transmission. Discussion of William H. Kenerson's paper. 1800 w. Jour Am Soc of Mech Engrs-April, 1913. No. 41307 D.

Problems of Worm Gear Design. Otto M. Burkhardt. An analytical investigation of contact conditions in a worm gear outside the plane of symmetry with different pressure angles. 2500 w. Horseless Age—July 9, 1913. Serial, 1st part. No. 43671.

MACHINE WORKS AND FOUNDRIES

Accident Prevention

Suggestions for Preventing Foundry Accidents. W. H. Cameron. An account of the experience of one of the smaller corporations in its efforts to prevent accidents. Ills. 4800 w. Am Found Assn

—Dec., 1912. No. 38619 N.

The Prevention of Industrial Accidents. Abstract of an address by Melville W. Mix at the Conservation Congress at Indianapolis. Ills. Ind Engng-Dec., 1912. No. 88105 C

The Prevention of Accidents in Steel Foundries. Guy W. Nelson. How the workmen are safeguarded against injuries. Ills. 2500 w. Foundry—Dec., 1912. No. 37992.

Three Years of Accident Prevention. Illustrated report of results of the Eastman Kodak Co., Rochester, N. Y. 1200 w. Ir Age—May 1, 1913. No. 41799 C. 1200

Accident Prevention. James B. Doug-Revision of an illustrated talk at the Public Policy meeting, Chicago, June 4, 1913. 2500 w. Sci Am Sup—Oct. 11, 1913. No. 45760.

Prevention of Accidents in the Foundry. Alexander E. Outerbridge, Jr. Illustrates and describes methods employed by William Sellers & Co., Inc., with excellent results. 2000 w. Ir Age—Oct. 9, 1913. No. 45763 C.

Prevention of Accidents in Factories. Good Work Done by a German Firm. From the A E G Jour. Illustrates and describes devices for the protection of workmen against accidents. 1000 w. Sci Am Sup—Oct. 4, 1913. No. 45616.

Recording Memoranda on Accident Prevention. Thomas D. West. Suggestions helpful in promoting safety. 1200 w. Am Found Assn—Oct., 1918. No. 46260 N. Safety First in the Boiler Shop. C. E. Lester. Calls attention to details needing inspection and care. 2500 w. Worker—Oct., 1913. No. 45769. 2500 w.

Accidents

See same heading, under RAILWAY EN-GINEERING, Permanent Way and Build-

Annealing

The Annealing of Steel Castings. Edwin F. Cone. Report of extensive investigations showing its effects on the structure. A plea for the slow-cooling process. Photomicrographs. 4000 w. Ir Age-May 1, 1913. No. 41798 C.

The Effect of Annealing on the Structure of Alloys (Contribution a l'ètude de l'influence du recuit sur la structure des alliages). M. A. Portevin. A detailed micrographic study on the physico-chemical effects to be noted. Ills. 20,000 w. Rev de Metal—June, 1913. No. 43062 H.

Studies on the Development of Grain in Metals by Annealing After Cold Working (Recherches sur le développement des grains des métaux par recuit apres écrouissage). Felix Robin. An examination of the crystalline structure. Ills. 17,500 w. Rev de Metal—June, 1913. No. 43063 H.

The Development of Grain in Alloys by Annealing (Développement des grains de recuit dans les alliages). Felix Robin. Studies on alloys of tin, lead, zinc, aluminum, and copper. Ills. 4000 w. Rev de Metal—June, 1913. No. 43064 H.
The Annealing of Steel in an Alternating Magnetic Field. H. Pender and R.

L. Jones. Abstract of an article in the Phys. Rev. Gives results of experiments

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Bronze Founding

Arbors

on the effect on the magnetic qualities of exposing steel to a varying magnetic field during annealing. 3000 w. Elect'n, Lond—Aug. 22, 1913. No. 44906 A.

A Study of the Annealing Process for Malleable Castings. E. L. Leasman. Reports on experimental study with conclusions. Ills. 7500 w. Am Found Assn—Oct., 1913. No. 46264 N.

See also Hardening, under MINING AND METALLURGY, Iron and Steel.

Arbors

Arbors for Second-Operation Work. Albert A. Dowd. Drawings and descriptions of various types used for turning, boring and grinding, illustrating applications. 4000 w. Mach, N Y—Oct., 1913. No. 45608 C.

Work Holding Arbors and Methods for Turning Operations. Illustrates and describes devices designed for holding work in the Fay automatic lathe. 3500 w. Mach, N Y—Oct., 1913. No. 45601 C.

Axles

Forging Steel Axles by a Steam-Hydraulic Press. Illustrated description of the Carbon Steel Co.'s axle manufacturing process. 900 w. Ir Trd Rev—Dec. 26, 1912. No. 38536.

Backlash

The Elimination of Backlash. W. A. Field. Illustrates and describes devices for various applications. 1200 w. Mech Wld—April 18, 1913. No. 41760 A.

Brass Founding

A New Electric Furnace for Melting Brass. G. H. Clamer and Carl Hering. Read before the Am. Inst. of Metals. Discusses the factors involved and economies effected, describing a melting medium that has given good results. 4000 w. Foundry—Nov., 1912. No. 87234.

The Manufacture of Composition and

The Manufacture of Composition and Yellow-Brass Ingot at the Works of Whipple & Choate. Illustrated detailed description of methods of production. 3000 w. Brass Wld—Dec., 1912. No.

38570.

The Judicious Use of Cheap Metals in the Brass Foundry. A. Napier. Discusses methods of calculating the cost of different mixtures and the saving to be effected by variations in composition. 1500 w. Mech Wld—Dec. 13, 1912. Serial. 1st part. No. 38517 A.

Producing Brass Ingots in a Specially-Equipped Detroit Plant. Illustrated detailed description of a new plant and its equipment. 2500 w. Foundry — Feb.,

1913. No. 39652.

Some Aids to the Brass Foundry Management. W. M. Corse. Read before the Pittsburgh Found. Assn. Explains the system of a large shop for ascertaining

metal losses, cost per pound, etc. 2500 w. Foundry—April, 1913. No. 41037.

The Production and Working of Sheet

The Production and Working of Sheet Brass. Clarence Hoyt Stilson. Discusses possible improvements of manufacturing importance. 3500 w. Engineering Magazine—May, 1913. No. 41633 B.

Brass Foundries

The New Brass Foundry of the English & Mersick Company of New Haven, Conn. Illustrated description of the brass foundry of a shop devoted almost entirely to the manufacture of automobile products. 1500 w. Brass Wld—Aug., 1913. No. 44508.

The Application of Producer Gas to Brass Foundries. E. F. Bulmahn. Dis-

The Application of Producer Gas to Brass Foundries. E. F. Bulmahn. Discusses the subject of economical fuel with special reference to melting in the brass foundry industry. Ills. 5000 w. Am Inst of Metals—Oct., 1913. No. 46277 N.

The Brass Foundry of the Future. C. P. Karr. Reviews some of the changes taking place in the management of foundries. 2500 w. Am Inst of Metals—Oct., 1913. No. 46273 N.

The Bright Dipping of Brass. Describes the preliminary operations and some of the difficulties encountered. 1700 w. Brass Wld—Oct., 1913. No. 45999.

See Electrometallurgy, under Electri-CAL Engineering, Electro-Chemistry.

Brass Furnaces

Utilizing the Waste Heat from Brass Furnaces. Joseph Horner. Describes types designed to facilitate melting, with details of their construction. Ills. 1800 w. Foundry—March, 1918. No. 40287.

Briquetting Machine

Briquetting Machine for Metal Borings and Turnings. Illustrated description of a machine built in Leeds, Eng. 2500 w. Engng—Nov. 29, 1912. No. 38128 A.

Broaches

Points on Broach-Making. Franklin D. Jones. Drawings and discussion of features of broach-making. 1500 w. Mach, N Y —Oct., 1913. No. 45603 C.

Bronze Founding

The Pouring Temperature of Manganese Bronze. H. W. Gillett. Read before the Am. Inst. of Metals. Gives results of investigation. 1200 w. Foundry—Nov., 1912. No. 37236.

The Molding of Bronze Statuary. E. A. Suverkrop. Illustrated detailed description of the making of a mold for a bronze statuette by the false core method. 2500 w. Am Mach—Dec. 5, 1912. No. 38065.

Copper Mold Casting (Kupferformguss). Friedr. Hüser. A study of the results obtained with pure copper and

Castings

various alloy percentages. Ills. 2000 w. Giess Zeit—April 15, 1913. No. 42123 D.

Automobile Cam Controlling Device. Christian F. Meyer. Illustrates and describes details of the design of cam mechanism for a knitting machine and its operation. 2200 w. Am Mach—Feb. 27, 1913. No. 40143.

Case-Hardening

The Thermal Conductivity of Carburizing Materials. J. H. Nead and J. N. Bourg. Report of tests made to determine the relative rapidity with which different carburizing materials would heat. 1200 w. Eng News—Oct. 31, 1912. No. 87207.

Note on the Case-Hardening of Special Steels. Albert Dauveur and G. A. Reinhardt. Describes tests of case-hardening yielding martensitic cases without re-course to the quenching bath. Ills. 1500 w. Bul Am Inst of Min Engrs—Nov., 1912. No. 87895 F.

Notes on the Science of Case Hardening Iron by means of Gases (Beiträge zur Kenntnis der Zementation des Eisens mittels Gasen). Franz Kurek. A metallographic study of the influence of various gases on case hardening. Plate. 3500 w. Stahl u Eisen—Oct. 24, 1912. No. 87407 D.

Case Carbonizing. Marcus T. Lothrop. Reports experimental researches under-taken to determine the causes of irregularity and the precautions necessary to secure uniform results. Ills. 13500 w. Jour Am Soc of Mech Engrs-Dec., 1912. No. 38508 D.

Case Carbonizing. Marcus T. Lothrop's paper is discussed. Ills. 2500 w. Jour Am Soc of Mech Engrs-April, 1913. No. 41306 D.

Heat Treating at an Automobile Engine Plant. Illustrates and describes an installation for tempering, heat treating and case hardening at works in Detroit. 1800 w. Ir Age—Jan. 2, 1913. No. 38759 C. Hardening Machine—Tool Parts. F. R.

Parsons. Describes method of casehard-

ening used by the writer. 800 w. Mech Wld—April 11, 1913. No. 41385 A.
Case-Hardening. David Keachie. (Abstract.) Describes the process and methods of testing. 5000 w. Mech Engr—May 30, 1913. No. 42773 A.
See also Steel under Manager App. 1677

See also Steel, under MINING AND MET-

ALLURGY, Iron and Steel.

Casting Ladles

Bunsen Burners for Heating Ladles by Gas (Bunsenbrenner für Gasbeheizung von Giesspfanner). Otto Johannsen. Brief description of several types of burners. Ills. 1500 w. Stahl u Eisen -July 31, 1913. No. 44609 D.

Castings

Blowholes in Castings. Walter J. May. Brief discussion of their cause and how to deal with them. 700 w. Prac Engr— Oct. 24, 1912. No. 37176 A. The Difficult Art of Casting German Silver. C. P. Karr. Read before the Am.

Inst. of Metals. Compares American, English and German methods of making this alloy, and gives hints on molding and casting. 1500 w. Foundry—Nov., 1912. No. 37235.

A Large Gun-Metal Casting Recently Made at the Works of the Whitlock Coil Pipe Company, Hartford, Conn. Illustrated description of an interesting casting to be used on the Panama Canal. 700 Brass Wld-Nov., 1912. No. 37796.

Steel Cast Locomotive Frames. Edwin F. Cone. Discusses the importance of the heat treatment and considers high carbon, vanadium, and nickel castings. Ills. 1800 w. Ir Age—Oct. 31, 1912. No. 37743 C.

Standard Specifications for Steel Castings. Gives the specifications adopted by the American Society for Testing Materials, June 1, 1912. 1500 w. Am Found Assn—Dec., 1912. No. 38614 N.

Economical Cleaning of Castings by Sand Blast. B. H. Reddy. Considers the abrasive material, the air pressure, sand blast nozzles and machines, etc. Ills. 4000 w. Am Found Assn—Dec., 1912. No. 38611 N.

Camber, and the Straightening of Bent Discusses effects and methods Castings.

of straightening. Ills. 1500 w. Mech Wld—Dec. 27, 1912. No. 38887 A. Commercial Tendencies in Malleable Castings Practice. Richard Moldenke. Calls attention to a tendency in America which results in unreliable castings. 1200 w. Am Found Assn—Dec., 1912. No. 39526 N.

Specifications for Machinery Castings. John Jermain Porter. Thinks their use would result in improved quality, but higher cost. 3000 w. Ir Age—Jan. 2, 1913. No. 38761 C.

Hydraulic Casting. William Ram

Fines. Directions for making sound hydraulic castings. Ills. 500 w. Prac Engr—Dec. 19, 1912. No. 38868 A.

Practice in the Casting of Cylinders for Hydraulic Presses (Erfahrunger beim Giessen gusseiserner). Zylinder für hydraulische Pressen). C. Brückner. Notes on points to be observed. Ills. 1800 w. on points to be observed. Ills. 1800 w. Geiss Zeit—Jan. 1, 1913. No. 40015 D. Methods of Preparing Basic Open-

Castings

Hearth Steel for Castings. H. F. Miller, Jr. Considers important factors in the production of solid castings. Bul Am Inst of Min Engrs — March, 1913. No. 40894 F.

Steam-Metal Valve Castings; Their Leakage and Method of overcoming It. Discusses the causes of leakage in valve castings and the remedies. Ills. 2500 w. Brass Wld—March, 1913. No. 40693.

European Electric Steel Automobile Castings. E. F. Lake. Illustrates and describes characteristics of castings made in a Switzerland steel foundry. 1800 w. Ir Age-March 27, 1913. No. 40887 C.

Producing Castings for the Automobile Trade. Illustrates and describes how aluminum crank cases and gray iron pis-tons are molded and cast. 2000 w. tons are molded and cast. Foundry-March, 1913. No. 40284.

Melting Process of the Steel Foundry. Edwin F. Cone. Considers different methods of producing steel castings, and their chemical, physical, and metallographic characteristics. Ills. 4000 w. Ir Age—April 3, 1913. No. 41069 C.

The Contraction of Castings. Walter some shrinkage Discusses

J. May. Discusses some shrinkage troubles and their causes. 1000 w. Mech Wid—March 21, 1913. No. 41011 A. Castings Made with Screw-Threads. Walter J. May. Describes the method of doing this work. 900 w. Mech Wid—April 4, 1913. No. 41232 A. Steel Castings and the Substitutes for Them. Happy Souther, Explains different

Them. Henry Souther. Explains differences in chemical composition, their physical qualities, and other products that are not steel. 1600 w. Ir Age—May 22, 1913. No. 42306 C.

Steel Castings from the Electric Fur-ice. Edwin F. Cone. Illustrated description of a modified Heroult installation at Easton, Pa., and the characteris-tics of castings of varying carbon con-tent. 2500 w. Ir Age—May 29, 1913. No. 42554 C.

Application and Production of Die Castings for Automobiles. Walter Betterton. Considers the present stage of development of this method of production, and problems yet to be overcome. 3000 w. Mech Engr—May 30, 1913. Serial 1st part. No. 42772 A.

Making Aluminum Automobile Castings at the Works of the United Foundry & Machine Company, at Bridgeport, Conn. Illustrated description of the plant, its equipment, and methods. 1800 w. Brass Wld—June, 1913. No. 42944.

The Manufacture of Manganese Steel

Castings. Illustrates and describes the practice of a Chicago company. 2500 w. Ir Trd Rev—June 19, 1913. No. 42965.

Malleable Iron Castings. Enrique Tou-

ceda. Discusses in detail the steps of the malleable iron process, the physical properties of malleable iron, and specifica-tions. Ills. 3500 w. S A E Bul—May, 1913. No. 42471 N.

Malleable Iron Castings for Automobile Work. Enrique Touceda. Read before Soc. of Auto Engrs. Discussion of the thickness of section that can be annealed, the limit of silicon content and the strength and adaptability of malleable. Ills. 3300 w. Foundry-July, 1913. No. 43413.

Secrets of Automobile Casting Manu-Illustrated description of how one foundry attained success in this difficult branch of gray iron work. 4500 w. Foundry-July, 1918. No. 43411.

The Heat-Treatment of Carbon Steel Castings. John H. Hall. Read before the Am. Soc. for Test. Mat. Tests which show that accelerated cooling is essential to obtain a fine microstructure in annealed steel castings. Ills. 2000 w. Ir Trd Rev—July 10, 1913. No. 48601.

The Production of Malleable Castings. Richard Moldenke. Address before the Am. Chem. Soc. Information concerning the structure, service, processes, etc. 4000 w. Am Found Assn—1913. No. 43334 N

Steel Casting (Ueber Stahlformguss). Dr. Geilenkirchen. A study of the metallurgical phases presented in the casting of steel. Serial, 1st part. 2300 w. Giess Zeit-June 15, 1913. No. 43501 D.

Typical Specifications for Steel Castings. Edwin F. Cone. Shows the diversities in those governing the production of railroad, industrial and marine work. 2500 w. Ir Age—July 31, 1913. No. 44102 C.

Cast Iron and Steel Casting in Electro-Machine Construction (Gusseisen und Elektro-Maschinen-Stahlformguss im bau). Fr. Goltze. Explaining the extra precautions to be taken and necessary studies to be made. Ills. Serial, 1st part. 2800 w. Giess Zeit—Aug. 1, 1913. No. 44627 D.

Iron Matte and Impure Castings (Mattes Eisen und unreiner Guss). The causes of impurity and F. Luhr. their elimination. Serial, 1st part. 3000 Giess Zeit—July 15, 1918. 44626 D.

On the Influence of Changing the Composition of Malleable Castings. P. Rodi-gin. Gives tests made on the effect of welding diverse elements to malleable cast iron in order to study the resulting chemical and physical properties. 800 w. Am Found Assn-Oct., 1913. No. 46265 N. Electric Steel Castings. F. T. Snyder.

Core-Rooms

A brief statement of the present situation regarding the electric melting of steel for 1200 w. small castings. 1200 w. An Assn—Oct., 1913. No. 46254 N. Am Found

The Story of Some Difficult Steel Castings. E. C. Jensen. Illustrates and describes the foundry, machining, testing and transportation problems of a shaft cover of New York's Catskill aqueduct. 5000 w. Ir Age—Oct. 9, 1913. 45761 C.

Some Difficulties in Pouring Steel Cast-R. A. Bull. Discusses leaking ladles and difficulties attending the transfer of steel from furnace to mold. 1800 Am Found Assn—Oct., 1913. No. 46262 N.

A Latter-Day Stove Shop. Edgar C. Kreutzberg. Illustrates and describes its equipment for fine casting production. 5000 w. Foundry—Oct., 1913. Special. No. 45707 C.

Casting Alloys in Permanent Moulds. Walter J. May. Suggestions for the work. 1200 w. Mech Wld—Oct. 3, 1913. No. 45851 A.

The Cast-Steel Dome for the Drainage Shaft of the Hudson River Siphon, Catsskill Aqueduct. Illustrates and describes the methods of manufacture and testing of dome and fittings, the transportation and erection. 5000 w. Eng News—Oct. 9, 1913. No. 45797.

Gray Iron for Motor Car Castings. H. B. Swan. An illustrated account of experimental work in the hope of producing a better iron for motor car castings. 3500 Am Found Assn—Oct., 1913. 46253 N.

Making of Gray Iron Motor Car Castings. H. B. Swan. Read before the Am. Found. Assn. Considers the effect of steel scrap, and the influence of the structure of various pig irons on the properties of the castings. Ills. 3500 w. Ir Age—Oct. 23, 1913. No. 46124 C.

Memoranda on Automobile Cylinder Founding. Robert Crawford. Calls attention to points needing care. Am Found Assn—Oct., 1913.

See also Annealing, Foundries and Molding, under Machine Works and Foundries; and Valves, under Machine Elements and Design; also Wheels, under Railway Engineering, Motive Power and Equipment.

Chain Making

The Manufacture of Chains. Jas. Baker. A summary of the methods in use for the manufacture of welded and unwelded chains, and a comparison of 4500 w. chain strengths. Am Mach-Nov. 19, 1912. No. 87380.

Chip Briquetting

The Recovery of Best Grade Castings by the Use of Metal Chips (Die Herstellung von Qualitätsguss unter Verwend-ung von Metallspänen). J. Mehrtens. An account of good results derived from the use of chip briquettes. Ills. 2500 w. Zeitschr des Ver deutscher Ing-Oct. 26, 1912. No. 37452 D.

The Use of Briquettes in Blast-Furnace Practice (Ueber die Verwendung von Kohlenstoffsteinen im Hochofenbetrieb). C. Geiger. Brief description of application, followed by lengthy discussion by Herr Schulte-Kump. Ills. 3800 w. Stahl u Eisen—Oct. 10, 1912. No. 37402 D.

Briquetting Plant for Metal Turnings and Borings. Illustrates and describes various plants erected by a Berlin firm. Engng—Jan. 24, 1913. 2500 w. 39799 A.

Chucks

Making the Horton-Morrow Chuck. Chester L. Lucas. Illustrates and describes the manufacturing methods employed. 3000 w. Mach, N. Y—June, 1913. No. 42576 C.

Cleaning Rooms
The Modern Cleaning Room for Castings (Die moderne Gussputzerei). Andreas Koob. A study of ideal arrangements and equipment. Ills. 2800 w. Giess Zeit—Sept. 15, 1913. No. 46023 D.

Special Machine for Winding Coils. Illustrated description of temporary rigs and of a semi-automatic machine for winding coils from the flat copper strip. 2500 w. Am Mach—Feb. 27, 1913. No. 40139.

Cold-Heading

Cold-Heading. Chester L. Lucas. plains the principles of cold-heading, reviewing its history, and illustrates samples and types of machine, etc. 2500 w. Mach, N Y—May, 1913. Serial. 1st part. No. 41785 C.

Copper-Clad Steel

Dip-Coppering Small Iron and Steel Goods. Gives a solution which has been found to give good results, and information relating to the process. 1500 w. Brass_Wld_March, 1913. No. 40696.

Copper Founding

Oxidizing Agents in Copper Founding and Their Uses 'Le role des oxydants dans la fonderie de cuivre et leur emploi). M. Portevin. Effects from the employment of the powder, "Homogen," in bronzes. Ills. 1500 w. Rev de Metall—Aug., 1913. No. 45320 H.

Core-Rooms

Features of American Core-room Practice. Henry Marquette Lane. The pres-

MACHINE WORKS AND FOUNDRIES

Cupola Practice

Cores

ent article considers the effect of machinery on the core-room, green and dry binders, binders in common use, and water soluble binders. 1500 w. Mech Wld-Serial, 1st part. No. Oct. 10, 1913. 45980 A.

Core Room Economics. O. F. Flumerfelt. Study and analysis of the different phases in the production of cores. 3000 w. Am Inst of Metals—Oct., 1913. No. 46274 N.

Cores

Jobs Where Coring Helps the Moulder. Joseph Horner. Discusses methods of coring, illustrating by examples. 800 w. Mech Wld—March 28, 1913. Serial. 1st

part. No. 41139 A.
Core Testing and Standards. Henry
Marquette Lane. A brief report of pro-Henry gress, giving results of tests. Ills. 1500 w. Am Found Assn-Oct., 1913. No. 46259 N.

Cost Estimating

Cost Estimating on Screw Machine Products. Gives details of the system of fixing prices and how the work is routed through the plant. Ills. 2500 w. Ir Trd Rev—April 17, 1913. No. 41321.

Crucibles

The Making of Magnesia Crucibles. Oliver P. Watts. Gives results of experiments in making these crucibles. 1000 w. Wis Engr—Nov., 1912. No. 38563 C.

Care of Crucibles. Walter J. May. Criticism of treatment given them, with suggestions. 900 w. Prac Engr—March, 1913. No. 40472 A.

Cupola Furnaces

Notes on Foundry Practice and Especially on Cupola Furnace Plants (Mitteilungen aus dem Giessereibetrieb unter besonderer Berücksichtigung der Kupol ofenanlage. J. Mehrtens. Practical notes on operation in various German plants. Serial. 1st part. 1400 w. Giess Zeit— April 1, 1913. No. 41425 D.

Experimental Investigation of the Cupola Melting Process. Frederick Hueser. Reviewed from Stahl und Eisen. Investigation of the metallurgical and thermic conditions incident to the cupola melting process. Ills. 1500 w. Am Found Assn —May, 1913. No. 42495 N.

Foundry-Cupola Gases and Temperatures. A. W. Belden. An investigation of the processes that take place in a foundry cupola during a melt. Ills. 6500 w. U.S. Bureau of Mines—Bul 54. No. 43217 N.

The Choice of a Cupola. Walter J. May. Suggestions for the selection and arrangement. 1000 w. Mech Wld-June 13, 1913. No. 43141 A.

Construction and operation of Cupola

Furnaces (Bau und Betrieb von kupolöfen). H. Kloss. Suggestions for the most advantageous construction, materials to be used, etc. 4900 w. Feuerungs—May 15, 1913. No. 48032 D.

Blast-Quantity and Pressure in Cupola Working. F. J. Cook. Read before the British Found. Assn. Gives the author's opinions and experiences, with results of tests, and conclusion. 3000 w. Ir & Coal Trd Rec-July 4, 1913. No. 43726 A.

A Remarkable Cupola Furnace Explosion (Ueber eine bemerkenswerte Kupolofen Explosion). Richard Fichtner. An account of an explosion in a Bohemian foundry, with a study of probable causes. Ills. 3800 w. Stahl u Eisen— June 26, 1913. No. 43508 D.

A Remarkable Cupola Explosion. Fichtner. Trans. from Stahl und Eisen. Describes an explosion probably due to the rapid formation of carbon monoxide. Ills. 1300 w. Ir Age—Aug. 14, 1918. No. 44342 C.

Cupola Furnace Construction with Tilting Forehearths (Kupolofenanlage mit kippbaren Vorherden). Edmund Neufang. Illustrated description of the op-eration and design of new type of con-struction. 2200 w. Stahl u Eisen—June 26, 1913. No. 43509 D.

An Investigation of Cupola Melting Operations. A. W. Beldon. Results of government tests to ascertain the location of the melting zone, reactions of gases

and best methods of charging. Ills. 5500
w. Foundry—Aug., 1913. No. 44093.
Blast Quantity and Pressure in
Cupola Working. F. J. Cook. Read before the British Found Assn. Investigates the maximum outputs with varying blasts, effect of blast on quality, giving a summary of conclusions from tests. 2000 w. Ir Age—Aug. 7, 1913. No. 44202 C.

Cupola Studies. H. B. Pulsifer. A report of student work at the Armour Inst. of Technology, with discussion of results. 2500 w. Chem Engr—Sept., 1913. No. 45593 C

The Use of Air-Dried Refractory Stone in Cupola Furnace Practice (Ueber die luftrockner Verwendung feuerfester Steine im Kupolofenbetrieb). O. Hoese. A study and comparison of the refractory properties of various minerals and their adaptation. Serial, 1st part. 1800 Giess Zeit—Aug. 15, 1913. 46018 D.

Cupola Practice

Air Required for Combustion in the Cupola, and a Simple Blast Velocity Gauge. P. Munnoch. Explains cupola combustion and describes a Pitot tube

Exhaust Systems

and gauge used to measure the velocity of air. Ills. 2000 w. Am Found Assn— Dec., 1912. No. 38601 N.

Lighting Fires in Cupolas. A. H. Illustrates and describes the lighting up of the coke bed of the cupola by the use of oil burners. 1000 w. Am Found Assn—Dec., 1912. No. 38608 N. Rational Cupola Melting Practice. Dr.

Richard Moldenke. A study of cupola melting and the principles governing the cupola furnace. 3500 w. Am Found Assn—Dec., 1912. No. 38620 N.

Cupolas

Melting Iron in the Cupola-Furnace. R. Moldenke. Discusses the conditions which should be observed and gives suggestions for producing success in the cupola-melting process. 3500 w. Bul Am Inst of Min Engrs—Jan., 1913. No. 39444 F.

Cutting Machine

The Taylor Rotary Cutting-Off Ma-Illustrated description of a machine exhibited at Olympia. 700 Engng—Jan. 10, 1913. No. 39260 A. 700 w.

Some Interesting Drawing and Curling Dies. Douglas T. Hamilton. Illustrated description of examples from a Columbus, O., shop. 1500 w. Mach, N Y — Jan., 1913. No. 88729 C.

Van Wagner Mfg. Co.'s Die-Casting ractice. Chester L. Lucas. Illustrates and describes the casting machines and dies used in producing pressure castings. 3000 w. Mach, N Y—Jan., 1913. No. 3000 w. 38717 C.

Making Dies Used in the Die-Casting Process. Describes the permanent molds used for the production of white metal parts, how they are designed and manufactured. Ills. 2500 w. Foundry—May, 1913. No. 41854.

Hardening Hammer dies. William E. Snow. Discusses heating and packing, quenching and quenching baths, temper-Ills. 2500 w. Mach, N Ying, etc.

June, 1913. No. 42568 C.
Making Dies Used in the Die-Casting Process. Illustrates and describes how the permanent molds used in the production of white metal parts are designed and manufactured. 2500 w. Ir Trd Rev.—July 17, 1913. No. 43775.

Sectional Punch and Die Construction. A. L. Monrad. Plan and sectional views with description. 1500 w. Mach, N. Y.— July, 1913. No. 43367 C.

See also Cold-Heading, under Machine Works and Foundries.

Locating Hole Centers in Tool Work. Francis Reuter. Explains a method of applying disks for spotting centers and for truing up with the test indicator before boring. 900 w. Am Mach-Nov. 7, 1912. No. 37298.

Drilling Machines

Recent Drilling Machines at the Last International Exposition (Neuzeitliche Bohrmaschinen unter Bericksichtigung der letzten Weltausstellungen). Types of machines exhibited at recent shows. Ills. Serial. 1st part. 4000 w. Zeit f Werkzeug—Feb. 5, 1913. No. 40573 D.

Six-Spindle Drilling-Machine. trations, with brief description of a machine designed and constructed for dealing with the steam-drums and water-pockets of water-tube boilers. 400 w.

Engng—March 21, 1913. No. 41015 A. Attachments for Sensitive Drilling Machine Tables. Fred Horner. Drawings and descriptions of special fittings. 700 w. Mech Wld-Oct. 10, 1913. Serial, 1st

part. No. 45979 A. Drills

The Vauclain Drill. Discussion of paper by A. C. Vauclain and H. T. Wille. 2500 w. Jour Am Soc of Mech Engrs—

April, 1913. No. 41302 D.
Quantity Production with Modern Gang Drills. Illustrates and describes how these machines are employed for drilling, reaming, facing, tapping and other operations. 2500 w. Ir Trd Rev—May 15, 1913. No. 42064.

Drop-Forgings

Drop-Forgings. Frank W. Trabold. An outline of the methods used and the history of the process. Discussion. 9500 w. S A E Bul—Nov., 1912. No. 38567 N.

Dust Extraction

See Exhaust Systems, under Machine Works and Foundries.

Enameling

Enameling Process for Cast Iron Sanitary Ware. Nelson E. Frissell. Report of an investigation of American enameling practice, including mixtures, cost of equipment, operation, etc. 4000 w. equipment, operation, etc. 40 Foundry—June. 1913. No. 42597.

The Art of Enameling or the Coating of Steel and Iron with Glass. Raymond F. Nailler. Brief review of the history of the art, outlining present day methods and the recent development of enameling larger apparatus. 4000 w. Jour Am Soc 1913. of Mech Engrs—Oct., No. 46140 D.

A New Process for Enameling Silver and Other Metals. Describes a process patented by Walter L. Shepard. 1000 w. Brass Wld—Oct., 1913. No. 45998.

Exhaust Systems.

Exhaust Systems for Grinding, Polishing, and Buffing Wheels. The specifications prescribed by the New York State

Foundries

Department of Labor. 2000 w. Mach, N Y-May, 1913. No. 41792 C.

Factory Equipment

Factory Building Equipment Details. Harry C. Spillman. Illustrates and describes partitions, storage racks, work benches and other details of a Detroit plant. 1500 w. Ir Age—March 6, 1913. No. 40334 C.

The Mechanical Testing of Files. George W. Burley. Discusses the demand for standard mechanical tests and Mach. N Ytest methods. 3500 w. Dec., 1912. No. 87984 C.

Finishing

Methods of Finishing Metal Surfaces. Edward K. Hammond. Explains the purpose of various finishes and how they are applied. Ills. 3500 w. Mach, N. Y. —July, 1913. No. 43361 C.

Fire Protection

Fire Protection at Lodge & Shipley Plant. Henry M. Wood. Illustrates and describes how the works are divided into districts equipped with fire-fighting apparatus for the use of brigades of employees. 1800 w. Ir Age—May 8, 1913. No. 41904 C.

See also same heading, under Civil En-

gineering, Construction.

Forging Machine Forging. Douglas T. Hamilton. Illustrates and describes machines and methods employed in the manufacetc. 2500 w. Mach, N Y—April, 1913.

Drop-forging. Describes changes introduced in the process of making steel drop-forgings. 700 w. Mech Wld—Sept. 5, 1913. Serial, 1st part.

No. 45150 A.

The Influence of Forging Upon the Properties of Soft Mild Steel (Ueber den Einfluss des Schmiedens auf die Eigenschaften eines weichen Flusseisens). P. Oberhoffer. Results of a series of experiments upon metal rods, and the tests adopted. Curves. Serial, 1st part. 3500 w. Stahl u Eisen—Sept. 11, 1913. No. 45383 D.

Foundries

Steelwork Designs and Handling Equipment of a Large Foundry. Illustrates and describes heavy framework, crane system, and industrial track layout in a foundry producing 100 tons per day. 2000 w. Eng Rec-Nov. 9, 1912. No. 37353.

A Foundry Specializing in Machinery Castings. Illustrated description of the gray iron shop operated by the Fulton Iron Works, St. Louis. 2000 w. Foundry-Nov., 1912. No. 37288.

Layout of Modern Gray Iron Foundries (Ueber Bodenbedarf moderner Graugiessereien). Eugen Munk. A comparison of plans in use at various German works. 5600 w. Stahl u Eisen—Dec. 26. 1912. No. 39024 D.

The Relation of Foundry Floor Space of output of gray iron jobbing, implement, steel, and iron foundries. Ills. 2500 w. Foundry — May. 1913. to Output. Considers the area per ton

41855.

A Model Plant for Making Implement Castings. Illustrated description of a large gray iron foundry at Rockford, Ill. 2500 w. Foundry - May, 1913. 41851.

Adolf-Emil Foundries in Esch The (Die Adolf-Emil-Hütte in Esch). An il-

Improvements at the Plant of the Falk Company. Illustrates and describes the gas producer installation, coal handling plant, and new open-hearth and annealing furnaces. 2000 w. Ir Trd Rev—June 26, 1913. No. 43236.

The Foundry Floor and Its Mainte-nance. Walter J. May. Suggestions for keeping the floor in good condition. 1200 Mech Wld—June 27, 1913.

43639 A.

Six-Story Continuous Illustrated Building. Oliver J. Abell. description of the new structure of the Ford Motor Co., Detroit, and other plant 4500 w. extensions. Ir Age-July 3. 1913. No. 43449 C.

How a Modern Railroad Foundry Is Equipped. Edgar Kreutzberg. Illustrated description of the new shop of the D. & H. Co. for the production of gray iron and steel castings. 2000 w. Foundry

Sept., 1913. No. 44857.

The Labor and Installation of Foundries; Also Some Plants in General in America (Le travail et l' installation des fonderies ainsi que des usines en général en Amerique). M. Brasseur. A study of American methods compared with French practice. 6000 w. Rev de Metall—Aug., 1913. No. 45317 H.

Foundry Output and Convenient Arrangement. Henry Marquette Lane. Discusses the effect of arrangement upon the output. 1500 w. Ir Age-Oct. 9, 1913.

No. 45764 C.

Success in Foundry Operation Not Simple. Ward H. Dean. Gives examples of failures, explaining their causes. 2200 w. Ir Age—Oct. 9, 1913. No. 45765 C.

Foundry Scrap.

See same heading, under Heating and Cooling, and Fire Prevention, under Civil Engineering, Construction.

Foundry Fuel

See Fuel Oils, under Steam Engineering.

Foundry Heating
See Foundries, under Heating and Cooling.

Foundry Laboratory

Some Short Cuts in the Foundry Laboratory. P. A. Boeck. Considers some of the approved forms of apparatus for research work. Ills. 3500 w. Am Found Assn—Dec., 1912. No. 38618 N.

Foundry Lighting

The Artificial Lighting of Iron Foundries. D. R. Wilson. From report for 1912 of the Chief Inspector of Factories and Workshops. Discusses the general characteristics and gives results of 1200 w. Mech Engrobservations. July 4, 1913. No. 43714 A.

Foundry Losses

Recovery of Shot in Small Foundries. S. A. Capron. Describes a devise consisting of two sets of belts running in parallel planes. Electric magnets gather the lost metal, and conveyor belts deposit and sort the material. Ills. 600 w. Am Found Assn—Dec., 1912. No. 38604 N. Foundry Mixtures

The Use of Mayari Iron in Foundry Mixture. Quincy Bent. Illustrated report of results obtained by the use of pig iron made from Cuban ore, in the production of close-grained and chilled gray iron sections. 2500 w. Ir Trd Rev—Oct. 31,

1912. No. 37181.
Use of Mayari Iron in Foundry Mix-Quincy Bent. Read before the tures. Am. Ir. & St. Inst. Deals with the preparation and use of the ore in the blast furnace, the chilling, tensile, transverse, hardness and machining tests of castings. Ills. 3000 w. Ir Age—Oct. 31, 1912. No. 37744 C.

Foundry Operations

The Great Economies Produced by Continuous Foundry Installations. George K. Hooper. Discusses results obtained by the use of the continuous method. 3000 w. Am Found Assn—Dec., 1912. No. 38602 N.

Foundry Power

Economical Motive Power in the Foundry (Wirtschaftlichkeit von Kraftwers-antrieben für Huttenwerke). M. Gercke. Discusses the growth and practicability of steam turbines, large gas engine and Diesel engines in foundry Serial, 1st part. 2300 w. work. Ills. Stahl u Eisen-June 12, 1913. 43505 D.

The Power Question in Foundry Work Antriebsfragen in werken). G. Stauber. A comparison of the cost and service from gas power and turbine power, including some opinions on the Bone combustion methods. Serial, 1st part. 4000 w. Stahl u Eisen-Aug. 14, 1913. No. 45376 D.

Foundry Practice

Foundry Wastes (Giesserei-Ausschuss). Oskar Leyde. Suggestions for tabulated forms in keeping track of wastes of all sorts. 3500 w. Giesserei-Zeitung-Oct. 1, 1912. No. 37413 D.

The Importance of Dispatching in the Foundry. C. E. Knoeppel. An outline of management aiming at efficiency. 3000 w. Am Found Assn—Dec., 1912.

38605 N.

Some Salient Points in the Modern Steel Foundry. Samuel R. Robinson. Describes advancement made in the differ-ent departments of the steel foundry in recent years. 1200 w. Am Found Assn —Dec., 1912. No. 38606 N.

Creation and Loss of Arts and Skill in Founding. Thomas D. West. Read before the New England Found. Assn. Discusses changed conditions. 4500 w. Engng

-Jan. 17, 1913. No. 39482 A. Smelting Methods in the Foundry (Der Schmelzbetrieb in der Eisengiesserei). Herr Mehrtens. A review of furnaces, presses and practice in modern foundries. Ills. 5000 w. Zeit des Oest Ing u Arch Ver—Jan. 24, 1913. No. 40547 D. Foundry Tests and Foundry Practice.

W. R. Dean. Suggestions helpful in determining the quality of the metal. 1500 w. Am Inst of Metals—Sept., 1912.

No. 43289 N.

Features of American Core Room Henry M. Lane. A comparison of methods in French and American foundries. Discusses core binders, core

baking and core machines. 4500 w. Ir Age—Aug. 21, 1913. No. 44489 C. Rational Smelting and Founding in Metal Work (Rationelles Schmelzen und Giessen in der Metallgiesserei). K. Hunger. An explanation of the fundamental principles involved. Serial, 1st part. 2500 w. Giess Zeit—July 15, 1913. No. 44625 D.

Overland Company's Aluminum Foundry. Illustrates and describes the modern methods of molding and casting. 1500 w. Automobile-Sept. 11, 1913. 45106.

Foundry Scrap

Efficient Organization for Handling Salvage. H. C. Pearce. Urges the establishment of a systematic plan for reclaiming serviceable material and of

Foundry Shifts

MACHINE WORKS AND FOUNDRIES

Furnaces

marketing scrap to advantage. 3000 w. Ry Age Gaz-Dec. 13, 1912. No. 38186.

Foundry Shifts
The Eight-Hour Shift in the Steel
Foundry. R. A. Bull. A statement of results obtained in open-hearth furnace operation. 2500 w. Foundry-Nov., 1912. No. 37230.

Foundry Training

Foundry Training in the Higher Trade chools. Dr. Otto Brandt. Abstract translation. A review and comparison of German and American foundry schools, 2000 w. Am Found Assn— Aug., 1913. No. 44741 N.

Foundry Transporters

Recent Foundry Transporters (Neuere Giesswagen). Description of some electrically driven floor transporters. Ills. 2000 w. Stahl u Eisen—Oct. 17, 1912. No. 37405 D.

Modern Transporter Systems for Foundries (Moderni impianti di trasporto per fonderie). Hubert Hermanns. Typical plans for installations, and recent types.
Ills. Serial. 1st part. 1800 w. Industria—Feb. 23, 1913. No. 40614 D.
Electric Iron-Ore Transport for the
Rombach Foundry (Elektrische Eisenerzungstehen Hötten

transportbahnen der Rombacher Hüttenwerke). Herr Schroedter. Details of electric railway system used in connection with this plant. Ills. Serial. 1st part. 6500 w. Elek Kraft u Bahnen— Dec. 14, 1912. No. 39050 D.

Foundry Valuation

A New Test for the Valuation of Foundry Production (Ein neues Wertberechnungsverfahren für Giessereierzeugnisse). Carl Rein. The development of formulae and tables in the determination of the Computation Discussion 3500 w. tion of valuation. Discussion. 3500 w. Stahl u Eisen—July 31, 1913. No. 44610 D.

Furnace Chargers

Mechanical Cupola Charging (Mechanische Kupolofenbeschickung). A review of authoritative opinions as expressed in various articles. Serial. 1st part. 1400 w. Giess Zeit— Feb. 1, 1913. No. 40516 D.

Furnace Charging Machines with Special Reference to Open Hearth Work. J. Smith. Illustrated detailed description of various forms of machines. 1500 w. Elect'n Lond—Dec. 13, 1912. (Special.) No. 38856 D.

Furnace Foundations

Heavy Concrete Foundations in Foundry Shops (Schwere Betonfundierungen auf Hüttenwerken). W. Schömburg. Plans and details of footings for shops, cooling rooms and furnaces. Ills. 2200

Beton u Eisen-Sept. 13, 1913. No. 46029 E.

Furnace Fuels

Oil Firing, with Especial Regard to Oil-Fired Smelting Furnaces and Oil Burners for Foundry Work (Ueber Oelfeuerung mit besonderer Berücksichti-gung der ölgefeuerten Schmelzöfen und der Oelbrenner für den Giessereibetrieb). der Oelbrenner für den Glessereibetrieb).
Wilhelm Venator. Quality of oil, burner
design, layout of piping and tanks, etc.
Serial. 1st part. 1600 w. Gless Zeit—
Feb. 15, 1913. No. 40518 D.
Kerosene for Steel Heating Furnaces.
Harry C. Spillman. Describes the arrangement of a well-equipped heat-treating department and discusses the com-

ing department and discusses the comparative values of fuel oil and kerosene. 1200 w. Mach, N Y—Oct., 1913. No.

45610 C.

The Use of Pulverized Coal as a Fuel for Metallurgical Furnaces. H. R. Barnhurst. A study of the availability of pulverized coal as a fuel, the proper method of firing, the control of fuel and air, and factors necessary for success. 4500 w. Bul Am Inst of Min Engrs—Oct., 1918. No. 46353 F.

Furnace Heating
The Use of Heavy Oil in the Heating
of Metallurgical Furnaces (L'application du chauffage à l'huile lourde aux fours M. Brasseur. Commetallurgiques). parative cost with electric furnaces and some actual experiences. 3800 w. Rev de Metall—Aug., 1913. No. 45318 H. See also Gas Producers, under MINING AND METALLURGY, Coal and Coke.

Furnaces

Furnace Efficiency. Joseph Harrington. Aims to show the insufficiency of the usual method of analysis, and to present a method by which the efficiency of the elements themselves can be determined, and errors corrected. 11500 w. Jour W Soc of Engrs-Nov., 1912. No. 38561 D.

The Design of Ignition Arches. Joseph Harrington. Discusses principles underlying their design, and compares flat arches with sprung arches. Ills. 1800 w. Power—Dec. 10, 1912. No. 38101.

The Charcoal Furnace of the East Hampton. Connecticut, Bell Makers; Its History, Uses and Advantages. Erwin S. Sperry. Illustrates and describes this charcoal furnace and its work, and gives information concerning the bells manu-factured. 3000 w. Brass Wld—Jan., 1913. No. 39344. The "Gamm" Oil Reverberatory Fur-

nace for Melting Nickel. Illustrated description of this furnace and its working. Brass Wld-Feb., 1913. No. 1500 w. 40146.

Grinding

Cost of Running Annealing and Heating Furnaces. J. Lord. Abstract of a lecture at the Roy. Tech. College, Glasgow. Considers different designs of furnaces operated by four kinds of fuel and their cost of running. 2000 w. Ir & Coal Trds Rev—March 14, 1913. No. 40835 A.

Improvements in Furnace Equipment for Solid Fuels (Neuerungen bei Feuer-ungs anlagen für feste Brennstoffe). Herr. Pradel. Recent improvements in design, charging devices, draft regulators, etc. Ills. 4000 w. Feuerungs—April 1, 1913. No. 41442 D.

Principles for the Correct Design of Furnace Plants (Grundlagen für das richtige Entwerfen von Ofenanlagen). From an article by W. E. Grum-Grzimailo. A series of suggested plans. Ills. Serial. 1st part. 2000 w. Stahl u Eisen —May 22, 1913. No. 43003 D.

Improvements in Oil Firing with Special Reference to the Buess Oil-Fired Furnace (Fortschritte auf dem Gebiet der Oelfeuerung unter besonderer Berücksichtigung der Oelschmelzösen System Buess). P. Lennings. A description of the Buess system and its practical application. Ills. 7000 w. Giess Zeit— May 15, 1913. No. 43004 D.

Handling Cheap Furnace Work with Profit. Explains shop methods employed to eliminate waste motion in low-priced installations. 2200 w. Met Work-Aug.

15, 1913. No. 44436.
The Present Status of the Reheating Furnace Question (Ueber den heutigen Stand der Tiefofenfrage). F. Schruff. A review of recent patents and their description. Ills. Serial, 1st part. 2200 w. Stahl u Eisen—July 3, 1913. No. 44601 D

The Life of Crucible Steel Furnaces. John Howe Hall. Information concerning the life of crucible furnaces and the factors that determine it. 1000 w. Bul Am Inst of Min Engrs—Sept., 1913. No. 45472 F.

Electric Furnaces in Iron and Brass Foundries. E. Kilburn Scott. Discusses the possibilities of this new type of meltting equipment. 3000 Sept., 1913. No. 44860. 3000 w. Foundry-

Investigations on a McLean Furnace (Untersuchungen an einer McLean' schen Feuerung). E. Schilling. Description of this type of furnace and results of some experiments. Ills. Serial, 1st part. 2700 Fenerungs—Sept. 1, 1913. 46064 D.

A Comparison of Two Puddling Furnaces and Their Economy from a Chemical Viewpoint (Gegenüberstellung zweier Puddelofensysteme und ihre vom chemischen Gesichtspunkte aus betrachtete Wirtschaftlichkeit). Herr Milke. ordinary system compared with the Pietzka patent. Ills. 2800 w. Giess Zeit — Sept. 1, 1913. No. 46020 D.

See also Tar, under Materials of Construction, and Electric Furnaces, under ELECTRICAL ENGINEERING, Electro-Chemistry.

Galvanizing

Galvanizing Tubes by Machinery. N. ichert. Trans. from Stahl und Eisen. Illustrates and describes details of the apparatus used. 800 w. Ir & Coal Trds Rev-Nov. 8, 1912. No. 87652 A. "About Sherardizing." Thoms

Thomas Liggett. Jr. An account of the discovery of this process of galvanizing, describing the apparatus needed and the application of the process and giving related information. Ills. 2500 w. Am Found Assn tion. Ills. Dec., 1912. No. 38603 N.

Old and New Methods in Galvanizing Aluminum (Altes und Neues ueber die Galvanisierung des Aluminiums). Dr. F. Describes the Regelsberger. several 2000 w. methods. Serial. 1st part. 2000 w. Elektrochem Zeit—Oct., 1912. No. 38462 D. A New Pickling and Galvanizing Plant.

Illustrates and describes improvements introduced in the sheet mill of the Brier Hill Steel Co., at Niles, Ohio. 1000 w. Ir Age—July 31, 1913. No. 44103 C.
The Electro-Galvanizing Process. Sey-

mour W. Rowsbar. Describes and compares the processes used. 3500 Foundry-Oct., 1913. Special. 45709 Č.

See Galvanized Iron, under Materials of Construction.

Limit Gauges. Walter Heap. Shows the importance of limit gauges, and that it is unnecessary to aim at extreme accuracy. 2000 w. Mech Wld—March 28, 1913. No. 41138 A.

Gear Cutting

An Early Automatic Gear Cutting achine. Douglas T. Hamilton. An Machine. illustrated record of improvements made in gear cutting machinery in the shops of R. Hoe & Co., New York. 3000 w. Mach, N Y—Sept., 1913. No. 44840 C. Inspection Tests for Cincinnati Gear-

Cutting Machines. Illustrates and describes methods of testing alignment of parts while gear-cutting machines are Mach, N Ybeing assembled. 800 w. Oct., 1913. No. 45604 C. See also Gears, under Machine Ele-

ments and Design.

Grinding

Grinding Wheels and Safety of Opera-

Krupp Centennial

tion. Issued by Travellers Ins. Co., Hartford, Conn. Illustrates and describes methods of protecting human life and limb. 2500 w. Sci Am Sup—Nov. 23,

1912. No. 37736.

Plain Cylindrical Grinders. Describes machines exhibited at the Olympia Exposition. 2500 w. Prac Engr-Nov. 7, 1912. No. 37623 A.

Grinding Practice in Foundries of the United States (Zur Schleiftechnik in den Giessereibetrieben der Vereinigten Staaten von Nordamerika). C. Krug. Illustrates various types of mountings in some large American plants. 2100 w. Stahl u Eisen-Nov. 28, 1912. No. 38410 D.

The Bryant Chucking Grinder. Illustrated description of a combined hole and face grinder manufactured in Spring-field, U. S. A., and shown at the Olympia Exhibition. 600 w. Engng—Jan. 17, 1913. No. 39478. A

The Queen City Cylindrical Grinder. Illustrated description of a design having a stationary work table and traversing wheel base. 1800 w. Am Mach-Jan. 9, 1913. No. 38940.

Specifications for Exhaust System for Grinding, Polishing, and Buffing Wheels. Gives specifications compiled by William Newell and issued by the New York State Department of Labor. Aims to bring about the efficient removal of dust. 1800

w. Brass Wid—April, 1913. No. 41579. Grinding Wheel Sparks. R. G. Williams. Illustrated discussion of spark characteristics and what they indicate. 1800 w. Sci Am Sup-May 10, 1913. No.

41913. Modern Methods of Grinding. Edward W. Dodge. Remarks on the extent to which we are indebted to grinding machines, and on their manufacture and use. Discussion. 5000 w. Pro S & S-W

Ry Club-March, 1918. No. 42399 C. Large Plain Grinding Machine. lustrated description of a machine claiming to be the largest of its class yet built. 1000 w. Engr, Lond—June 20, 1913. No. 43393 A.

Grinding Rolls and Other Cylindrical ections. Illustrated description of a Sections. new tool, motor-driven throughout, built by the Norton Grinding Co. 2000 w. Ir Trd Rev-July 31, 1913. No. 44101.

See also Exhaust Systems, under Machine Works and Foundries.

Grinding Machines

New Grinding Machines for Locomotive Repairs (Neue Schleifmaschinen für den Lokomotivausbesserung). Herr Pontani. Description of several new German machines for grinding flat slide valves and axle boxes. Ills. 2200 w. Glaser's Ann -Oct. 1, 1913. No. 46017 D.

Guideways

Adjustable Guide-Strips. W. A. Field. Illustrated description of vee-strips and of square guides. 1200 w. Mech Wld-June 13, 1913. No. 43139 A.

Hardening

See same heading, under MINING AND METALLURGY, Iron and Steel.

Heading Machines

See Cold-Heading, under Machine Works and Foundries.

Indexing

Differential Indexing. A. R. Packard. Explains this method. 1500 w.

Mach—Dec. 19, 1912. No. 38265.

A New Method of Indexing on the Universal Milling Machine. George W. Briefly describes the different Burley. methods used, and also the proposed new method. 3000 w. Prac Engr—Dec. 12, 1912. No. 38390 A.

Industrial Plants

Layout, Design and Equipment of Industrial Plants. A. Home-Morton. tracts from a paper read before the Liverpool Engng. Soc. Discusses arrangements to secure efficiency and economy, processes and routing of work, and transmission of power. 1500 w. Can Engr—June 19, 1913. No. 42994.

Ironfoundry

Commencing a Small Ironfoundry. E. Henderson. From a paper read before the British Found. Assoc. Suggestions for the location, construction, power, equipment, etc. 3000 w. Mech Wld—May 30, 1913. No. 42774 A.

Jarring Machines

A New German Jarring Machine (Eine deutsche Rüttelformmaschine). Jakob Leber. A device for the moldingroom, giving noteworthy results in actual practice. Ills. 3500 w. Stahl u Eisen—March 27, 1913. No. 41408 D.

Jig for Milling an Irregular Shaped Guide. Christian F. Meyer. Illustrated detailed description of the jig and its operation. 1000 w. Mach, N Y—Jan., 1913. No. 38723 C

A Universal Drill Jig. Christian F. Meyer. Drawings and description of a design intended to handle castings, having a round boss on one side. 700 w. Mach, N Y—Sept., 1913. No. 44838 C.

Krupp Centennial

The Centenary of the Krupp-Works (Le Centenaire des Usines Krupp). A. Bidault des Chaumes. Brief description of the plant covering the Essen steel works, the Rheinhausen blast-furnaces, the Germania navy yard, etc. Ills. 6400

Machine Attachments

Genie Civil-Oct. 12, 1912. No. 37514 D.

Lathe Fittings

Lathe Centres and Allied Fittings. Deals with centres and fittings connected therewith. Ills. 1000 w. Mech Wld— Feb. 28, 1913. No. 40480 A.

A Few Hints on Buying a Lathe. F. R. Parsons. 1600 w. Prac Engr-Dec. 26, 1912. No. 38873 A.

Bullard 36-Inch Vertical Turret Lathe. Illustrates and describes the interesting features of the design. 2500 w. Mach-Jan. 16, 1913. No. 39122.

Developing the Engine Lathe in an Auto Shop. Fred H. Colvin. Gives examples of turning in which the engine lathe has saved money over more expensive machines. Ills. 1200 w. Am Mach -Jan. 16, 1913. Serial. 1st part. No. 39123.

Lathe Setting and Testing. T. G. Gray. Suggestions for the inspection and testing. Ills. 2000 w. Mech Wld—Jan. 8,

1913. Serial. 1st part. No. 39149 A.
Design Analysis of Small Engine
Lathes. E. H. Fish. Gives a complete
analysis of the designs of eight representative engine lathes. Ills. 8000 w.
Am Mach—Feb. 6, 1913. No. 39671.

Electrically Driven High-Speed Turning Lathe at H. Wohlenberg in Han-nover (Neue Schnelldrehbank mit elektrischem Antreib von H. Wohlenberg in Hannover). F. Nickel. Details of new motor-driven lathe. Ills. 2000 w. motor-driven lathe. Ills. 2000 w. Zeitschr des Ver deutscher Ing-Jan. 4, 1913. No. 40037 D.

The Relieving or Backing-Off Lathe. George W. Burley. Explains the principle underlying the action of these machine tools. Ills. 3000 w. Prac Engr-

Feb. 20, 1913. No. 40309 A.

A Basis for Measuring Lathe Capacity. L. R. Pomeroy. Considers methods devised by J. T. Nicolson. The value of torque at one foot radius gives a correct estimate of the metal removing capacity. 1800 w. Am Engr-March, 1913. No. 40342 C.

Brass-Finisher's Plugging Lathe. lustrated description of details of this English lathe and its attachments. 1500 Engng — April 18, 1913. No. 41769 A.

The Lathe as a Machine Tool. J. D. Smith. Shows the possibilities of a lathe in a small shop. 1800 w. Engr.—May 1, 1913. No. 41919 A.
The New Selective Head Lathe.

lustrated description of a new lathe built in Cincinnati. The selective type of automobile transmission has been adopted for the gear box drive. 1500 w. Ir Age-June 26, 1913. No. 43239 C.

A 50-Inch Gun Lathe. Illustrated description of a lathe built to meet the latest requirements of ordnance construction. 800 w. Engr, Lond—June 6, 1913. No. 42892 A.

Designing Faceplate Jaws and Screws for a Heavy Lathe. W. G. Dunkley. An analysis of stresses and determination of dimensions to resist them. 1700 w. Mach,

N Y—June, 1918. No. 42569 C. 74-In. Centre Motor Driven Screw-Cutting Break Lathe. Illustrates and describes a quadruple-geared surfacing and screw-cutting break lathe. Plate. 800 w. Engng-July 4, 1913. No. 43718 A.

Manufacturing Greaves-Klusman Engine Lathes. Douglas T. Hamilton. Illustrates and describes some tools and

methods employed in making gear-boxes, aprons, &c. 3000 w. Mach, N Y—Aug., 1913. No. 44084 C.

A New Combination Turret Lathe. Illustrated description of a new pattern embodying features of interest. 1000 w. Engr, Lond—Sept. 12, 1913. No. 45406 A.

Gun Lathe and Boring-Machine. Illustrated description of an exceptionally large combined gun-turning lathe and boring-machine. 1200 w. Engng—Aug. 22, 1913. No. 44920 A.

14-In. Swing "Apollo" Combination Turret Lathe. Illustrated description of a machine built in Manchester, Eng. 2200 w. Engng—Oct. 10, 1913. No. 45983 A.

Lathe Work

Efficient Production of Cylindrical Shows how efficiency can be increased by rough lathe turning prepara-tory to cylindrical grinding. Ills. 3000 w. Mach, N Y—Dec., 1912. No. 37986 C. Efficient Production of Cylindrical

Work. C. H. Norton. Discussing grinding and turning, showing that the highest efficiency is secured by using the lathe as a roughing tool, and transferring the re-fining to the grinding machine. Ills. 3500 w. Jour Am Soc of Mech Engrs— Jan., 1913. No. 39352 D.

Efficient Production of Cylindrical Work. A discussion of C. H. Norton's paper. 800 w. Jour Am Soc of Mech Engrs—April, 1913. No. 41299 D.

See also Grinding, under Machine Works and Foundries.

Machine Attachments

Cross-Drilling and Milling Attachments. Douglas T. Hamilton. Illustrated description of attachments applied to the "Acme" multiple-spindle automatic screw machine. 2000 w. Mach, N Y—April, 1913. No. 40988 C.

Machinery Purchases

MACHINE WORKS AND FOUNDRIES

Machining

Machinery Purchases

Following Up the Purchase and Installation of Machinery. Alden W. Welch. Explains a system for supervising and following up the purchase and installation of machines. 3000 w. Engng Mag
—Aug, 1913. No. 43913 B.

Machine Supports

Machine and Work Centres. George W. Burley. Drawings and discussion of supporting centres of machine tools. 1200 w. Prac Engr—March 27, 1913. Serial. 1st part. No. 41005 A.

Machine Tools

The New Era in Machine Tool Design. E. P. Bullard, Jr. Address to the Cleve-land Engng. Soc. (Abstract.) Discusses what must be done to secure efficient tools. 2500 w. Ir Age—Dec. 12, 1912. No. 38168 C.

The New Era in Machine Tool Design. E. P. Bullard, Jr. Abstract of a lecture before the Cleveland Engng. Soc. A review of improvements in design which promote productibility, durability and adaptability. 5000 w. Mach, N Y—Jan.,

1913. No. 38730 C.

The New Era in Machine Tool Design. E. P. Bullard, Jr. Remarks on presentday requirements and the importance of analysis of the work to be done and the analysis of the work to be done and the conditions to be met, discussing the essentials of machine tool design. Ills. 8500 w. Jour Cleveland Engng Soc—March 1, 1913. No. 40865 C.

A Powerful Slotting Machine.

A rowerrul Stotting Machine. Hustrations, with description, of a machine built in Leeds, Eng. 2000 w. Engr, Lond—Dec. 6, 1912. No. 38249 A. Chilled Cast Iron Used for Machine Tools. Henry M. Wood. Explains the advantages of chilled ways for lathe beds. Ills. 2000 w. Am Mach—Jan. 23, 1913 No. 39285 No. 39285. 1913.

The Capacity of Metal Working Ma-ines. Stuart Dean. Fifteenth article of a series on Shop and Foundry Management. Considers ways of learning about feeds and speeds. 1800 w. Ir Age—Feb.

20, 1913. No. 39927 C.

Methods of Lubricating Machine Tools. Joseph Horner. Illustrated review of oiling devices and systems of distribu-tion. 5000 w. Mach, N Y—Feb., 1913. Serial, 1st part. No. 39603 C. Milling Machines. Irvin Haworth. De-

scribes these machines and their use. 1800 w. Mech Wld—Feb. 14, 1913. Serial, 1st

part. No. 40123 A.

Machine-Tool Reverses. Hubert Bent-y. Illustrated study of the various methods adopted in machine-tool prac-1200 w. Mech Wld - April 11, 1913. No. 41384 A.

International Exposition of Machine Tools (Exposition internationale de machines-outils). F. Hofer. Illustrated description of some of the machines exhibited at the Olympia Show, London, October, 1912. Serial. 1st part. 3500 w. Genie Civil — March 29, 1913. No. 41526 D.

Power Requirements for Machine Tools. Harry C. Spillman. A summary of tests

Harry C. Spillman. A summary of tests made to determine power consumption of machine tools. Ills. 1200 w. Mach, N Y—June, 1913. No. 42570 C. Machine for Heavy Boring, Drilling and Tapping. Illustrated description of a machine driven by a variable speed motor. 500 w. Engng—May 30, 1913. No. 42783 A.

Modern Machine Tools for the Working of Metals (Les Machines-outils mod-ernes pour le travail des métaux). E. Gay. Brief descriptions of milling machines, gear-cutting machines, etc. Ills. 4500 w. Tech Mod—June 1, 1913. No. 43071 D.

Speeds and Feeds for Machine Tools. Robert Thurston Kent. Discusses why and how standardization in this respect should be agreed to by machine tool builders. 2500 w. Ir Age—July 3, 1913. No. 43451 C.

Heavy Tools for Machining Turbine ections. C. Van Langendonck. De-Sections. scribes details of the construction of large German machine tools especially designed for turbine work. Ills. 1000 w. Ir Trd Rev—July 17, 1913. No. 43776.

Brown's Worm Wheel Generating Machine. Illustrated description of a design in which means are provided for disconnecting the lathe from its drive and rotating freely by hand. 900 w. Mech Engr—June 27, 1913. No. 43635 A. Testing Machine Tools (Das Prüfen von Werkzeugmachinen). Rudolf Lang-

ner. A review of the precise tests made by manufacturers in the construction of the machines. Ills. 3300 w. Zeit des Oest Ing u Arch Ver—July 25, 1913. No.

See also Motor Drive, under Power and Transmission.

Machining

Machining Gas Tractor Parts by Novel Methods. Illustrates and describes how a Minneapolis shop was rearranged to facilitate production, and the equipment installed. 2000 w. Ir Trd Rev—March 13, 1913. No. 40629.

The Economical Machining of Plane Surfaces. W. A. Field. Explains the manner in which certain factors tend to influence the rate of output and quality of work when machining flat surfaces.

MACHINE WORKS AND FOUNDRIES

Molding

2500 w. Mech Wld-April 4, 1913. No. 41230 A.

Malleable Foundries

Some of the Troubles of Malleable Foundries. Richard Moldenke. Read before the Am. Found. Assn. Explains diffi-culties in making "low" and "high" irons, discussing the melting problem and an-nealing. 3500 w. Ir Age—Oct. 23, 1913. No. 46125 C.

Malleable Troubles. Dr. Richard Moldenke. Enumerates the more prominent "malleable troubles," locating their causes and suggesting the cure. 3500 w. Am Found Assn—Oct., 1913. No. 46272 N. See also Castings, under Machine

Works and Foundries.

Metal Coating
A New Process for Coating Surfaces with Metal. Dr. Lach. Illustrated description of coating by means of a spray of finely divided metal. 2000 w. Sci Am Sup—Aug. 16, 1913. No. 44356.

The Schoop Metal Spraying Process

with Particular Reference to Its Possible Utility in Foundry Work (Das Schoopsche Metallspritzverfahren mit besonderer Berücksichtigung der Anwendungs-möglichkeiten im Giessereifach). E. U. Schoop. The principles of the process and its application in case-hardening. Ills. Serial, 1st part. 2300 w. Gless Zeit—June 15, 1913. No. 43503 D.

Metal Coloring
Artificial Metal Coloring (Die künstliche Färbung der Metalle). H. Krause.
An outline of the chemical ingredients in use. Serial. 1st part. 2400 w. Zeit. March 1, 1913. No. 40521 D.

Coloring Iron and Steel Products. F. Lake. Deals with processes of metal coloring, preparing the work, pickling, etc. 3000 w. Mach, N. Y—June, 1913.

No. 42572 C.
Coloring Non-Ferrous Metals and Coloring Non-Ferrous Metals and Alloys. E. F. Lake. Gives directions for the work and receipts for producing different colors. 4500 w. Mach, N Y—Sept, 1913. No. 44843 C.

Metal Cutters

Automatic Train-Shears for Cutting (Selbsttätige Feineisen-Bars Small Arthur Quoilin. De-Streckenschere). scribes machine and its operation. Ills. 1300 w. Stahl u Eisen-Nov. 21, 1912. No. 38408 D.

Metal Cutting

Cold Saw Data from Makers and Users. Describes practice of reliable firms. 2200 w. Am Mach-Nov. 28, 1912. No. 87888. Millins

Milling Sad Irons. Brief illustrated description of the application of the Becker vertical type of milling machine to the making of sad iron bases. 800 w. Mach, N Y-Nov., 1912. No. 37164 C.

Milling Cutters

Milling Cutters at the Machine Shop and Foundry of Droop & Rein, Bielefeld (Die Fräsmaschinen der Werkzeugmaschinenfabrik und Eisengiesserei von Droop & Rein in Bielefeld). F. Nickel. Detailed illustrated description of the various types of cutters used at this plant. Plates. 5400 w. Zeitschr des Ver deutscher Ing—Dec. 7, 1912. No. 39031 D.

The Cutting Proportions of Milling Cutters (Ueber die Schnittverhältnisse von Fräsern). Josef Szentgyörgyi. Ratios for the proper design of the teeth. Ills. Serial. 1st part. 3800 w. Zeit f Werkzeug — March 15, 1913. No. 41503 D.

The Formation of Radial Milling-Cutter Teeth. George W. Burley. Drawings and description of the method used. 1500 w. Mech Wld-May 23, 1913. Serial. 1st part. No. 42751 A.

Milling Machines

Some Milling Experiments. P. Vernon. Abstract of a paper read before the Manchester Assn. of Engrs. Report of experiments aiming at improvements in the machine. Ills. 3500 w. Mech Engr—Nov. 29, 1912. No. 38121 A.

Universal Boring and Milling Machine with Internal Spindle. Illustrations with brief description. 300 w. Engng-Dec.

6, 1912. No. 38245 A. High Power Milling. H. Pearman. Discusses how to get the best results on present day machines. 1500 w. Prac Engr—Dec. 12, 1912. No. 38391 A. Milling Machines. Illustrates and de-

scribes types. 5000 w. Mech Wld-July

18, 1913. No. 43960 A.

Rapid Production with Milling Machines. Illustrated description of quickly adjusted fixtures for high production metal working machines. 800 w. Ir Age
—Aug. 7, 1913. No. 44200 C.
An Italian Milling Machine. Joseph

Horner. Brief illustrated description of a machine in which both speed and feed changes are derived from the same gear box. 1000 w. Mach, N Y—Oct., 1913.

No. 45606 C.

The New Reinecker Vertical Milling Machine (Die neue Senkrecht-Fräsmaschine von J. E. Reinecker A. -G. in Chemnitz-Gablenz). F. Nickel. Details of design and construction of these machines with notes of their adaptability. Ills. and Plate. 2700 w. Zeit des Ver deutscher Ing-Sept. 6, 1913. No. 46037 D.

Molding Molding Practice for Large Steel Cast-

Molding

MACHINE WORKS AND FOUNDRIES

Molding Machines

ings. Illustrates and describes methods used in a foundry at East Chicago, Ind. 1800 w. Foundry—Nov., 1912. No. 37232.

Molding Large Cast Steel Gears by Machine. Illustrates and describes details of the work. 1500 w. Foundry—Nov., 1912. No. 87229.

A New Moulding Machine. Illustrated description of a new machine of British make, intended to meet the requirements of foundries producing high grade eastings. 800 w. Engr, Lond—Nov. 8, 1912. No. 37650 A.

The Molding of Screw Propellers. J. Stormonth, Jr. Illustrated detailed description of methods used. 2000 w. Mech Wld—Nov. 15, 1912. Serial. 1st part. No. 37819 A.

Molding and Casting Conveyor Worms (Formen und Giessen von Transportschnecken). N. Ifkowitsch. Presents suggestions for these difficult castings. Ills. 1500 w. Giess-Zeit—Dec. 1, 1912. No. 38425 D.

A Foundry with Continuous Molding Units. Illustrated description of a castings plant at Cornwells, Pa. Cupola charging and gas power plant among the features. 6000 w. Ir Age—Jan. 2, 1913. No. 38757 C.

Molding Gas Engine Cylinders for Motor Cars. Illustrates and describes methods pursued in a foundry at Muskegon, Mich. 2500 w. Foundry—Jan., 1913. No. 38706.

Standard Turbine Cylinder Molding Practice. C. A. Tupper. Illustrates and describes economical methods used by the Allis-Chalmers Co. 2000 w. Foundry—Feb., 1913. No. 39650.

Lugs, Facings and Bosses. Francis W. Shaw. Suggestions for designers, pattern-makers, molders, etc. 800 w. Sci

tern-makers, molders, etc. 800 w. Sci Am Sup—Feb. 15, 1913. No. 39889. Rational Molding Procedure (Rationelle Formverfahren). P. Breidenbach. Machine parts and steps to be followed in molding work. Ills. Serial. 1st part. 1200 w. Giess Zeit—Feb. 1, 1913. No. 40517 D.

Molding Large Iron Generator Field Frames. Illustrates and describes how these castings were made true to the pattern and without distortion. 1000 w. Foundry—June, 1913. No. 42596.

The Hydrostatic Pressure on Molds and Cores. R. R. McGowan. Methods of figuring the pressure of the metal on various types of molds and semi- and fully-submerged cores. 2500 w. Foundry—June, 1913. No. 42598.

The Molding of Bronze Plaques. Directions for the work. Ills. 2500 w.

Brass Wld—June, 1913. No. 42945. "Drawbacks" in Hand-Molding. Wal-

"Drawbacks" in Hand-Molding. Walter J. May. Suggestions for this kind of work. 1000 w. Mech Wld—June 20, 1913. No. 43382 A.

Plate-moulding. Illustrates and describes examples. 2000 w. Mech Wld—July 4, 1913. No. 43716 A.

See also Trade Schools, under INDUSTRIAL ECONOMY.

Molding Machines

Recent American Jarring Machines (Neuere amerikanische Rüttelformmaschinen). U. Lohse. Describes the Herman bumper, and explains action. Ills. Serial. 1st part. 2100 w. Giess-Zeit—Nov. 1, 1912. No. 38423 D.

Rational Molding Practice (Rationelle Formverfahren). P. Breidenbach. Detailed description of a molding press adapted from the Bonvillain system. Ills. Serial. 1st part. 1200 w. Giess Zeit—April 1, 1913. No. 41427 D.

Modern Molding Machines, with Especial Attention to the Latest Jarring Machines (Moderne Formmaschinen unter besonderer Berücksichtigung der neuesten Rüttelformmaschinen). O. Dahlmeyer. Discusses the economical and practical advantages attained by the jarring machines. 2800 w. Giess Zeit—March 15, 1913. No. 41424 D.

Molding Machines for Shallow Work. Illustrated description of a machine for this special work constructed by a Paris firm. Plate. 1800 w. Engng—June 20, 1913. No. 43388 A.

Electric Molding Machines (Elektrische Formmaschinen). U. Lohse. A detailed study of various makes of machines, Part 1 taking up the Hannover-Hainholz machines. Ills. Serial, 1st part. 3500 w. Giess Zeit—June 15, 1913. No. 43502 D.

The "Taunton" Mechanical Ram Moulding Machine. Illustrates and describes a machine specially designed for producing moulds from patterns by hand power in such a manner as to compete with machines using hydraulic or pneumatic power. 600 w. Engr, Lond—Aug. 22, 1913. No. 44930 A.

Turnover Molding Machines with Large Stroke (Wendeplattenformmaschinen mit grossem Hub). Herr Hintze. Illustrating and describing new machine with mechanical lift for use with large, high molds. 1700 w. Giess Zeit—Oct. 1, 1918. No. 46026 D.

Examples of Practice in the Use of Jar-Rammed Molds (Anwendungsbeispiele für das Rüttelformverfahren). Bernhard Keller. Illustrating and describing practice in various classes of molds. 3000

Pneumatic Hammers

Stahl u Eisen-Sept. 25, 1913. No. 45004 D.

The Utility of Permanent Molds in the Iron and Metal Foundry (Die Brauchbarkeit bleibender Gussformen in der Eisenund Metallgiesserei). J. Mehrtens. A citation of examples describing the use and operation of permanent molds. Ills. Serial, 1st part. 1800 w. Giess Zeit— Sept. 15, 1913. No. 46021 D. See also Castings, under Machine

Works and Foundries.

Molding Sands

Testing and Valuing Molding Sands. (Prüfung und Bewertung des Form-sandes). Carl Buderus. Discusses the desirable qualities of molding sands and presents a new series of tests. Serial. 1st part. 2100 w. Giess-Zeit—Oct. 15, 1912. No. 37415 D.

Mechanical Sand Tempering. Minich. Describes the devices available for preparing the sand and the results obtained by their use. 3000 w. Am Found

Assn—Pec., 1912. No. 38609 N.
Facing Sand. Directions for preparing sand and moulds in order to obtain good castings. 1800 w. M. Nov. 29, 1912. No. 38126 A. 1800 w. Mech Wld-

An Automatic Plant for Preparing Molding Sand (Eine selbsttätige Anlage zur Aufbereitung von Formsand). C. Geiger. Describes two recent German appliances. Ills. 1400 w. Stahl u Eisen—Dec. 26, 1912. No. 39025 D.

An Automatic Plant for the Preparation of Model and Molding Sand (Eine selbsttätige Aufbereitanlage für Modellsand und Masse). Illustrated description of a new device. 1700 w. Zeit des Ver deutscher Ing-July 5, 1913. No. 44645 D.

Molding Sand. Its Tests and Value (Der Formsand, seine Prüfung und Bewertung). Carl Irresberger. Analytical methods for determining the desirable qualities of the sand. Ills. Serial, 1st part. 3500 w. Stahl u Eisen—Aug. 28, 1913. No. 45380 D.

Resumed Study on Molding Sands and Their Treatment (Étude résumée sur les sables de fonderie et leur traitement). A. L. Curtis. A study of sands from various sources and of many elements, for determining their suitability. Rev de Metall—Aug., 1913. No. 45316 H.

On the Relative Value of Foundry Flour, with Simple Methods of Testing. G. S. Evans. A summary of tests on foundry flours, with specifications for this material, prepared as the result of the investigation. 2000 w. Am Found Assn—Oct., 1913. No. 46268 N. Pattern Shop

Segmental Work in the Pattern Shop. W. J. Horner. Illustrated description of such work, explaining reasons and advantages. 1000 w. Mech Wld—Aug. 1, 1913. Serial, 1st part. No. 44314 A.

Some Present Pickling Methods. Oliver W. Storey. Discusses the need of removing scale, the factors to be considered in laying out a pickling plant, the strength and temperature of pickle and other details. 4000 w. Met & Chem Engng— Jan., 1913. No. 38972 C.

Pipe Cutting

Cutting Pipe and Pipe Threads. W. H. Wakeman. Describes methods of work. 2200 w. Dom Engng-Nov. 16, 1912. No. 37606.

Pipe Founding

Fixtures for Machining Exhaust Pipes. W. L. Myles. Illustrates and describes special fixtures used for machining a new style of exhaust pipe. 800 w. N.Y.—Feb., 1913. No. 89602 C. Mach.

New Pipe Founding Methods, Ardelt Construction (Ueber neue Röhrengiessereien, Bauart Ardelt). Robert Ardelt. Description of new plant at Hannover, and the plant at the Ardelt Works, Eberswalde, with details of methods. Ills. 2100 w. Stahl u Eisen—Feb. 27, 1913. No. 41401 D.

Pipe Foundry

The Manufacture and Use of Steel J. H. Nicholson and Emil Hol-Detailed explanation of the processes of manufacture, materials, specifications, applications, etc. Ills. 9500 w. Jour Am Soc of Nav Engrs—Nov., 1912. No. 38303 H.

Pipe Painting

A Unit System of Colors for the Recognition of Piping in Industrial Plants (Einheitsfarben zur Kennzeichnung von Rohrleitungen in industriellen Betrieben). A proposed system to be adopted uniformly in painting pipes for easy recognition; green, for water; yellow, for gas; blue, air; white, steam; red, acid; violet, lye; brown, oil; black, tar, and gray for vacuum. Plate. 1000 w. Stahl u Eisen -March 20, 1913. No. 41406 D.

Planers

Erection and Care of Planers. W. D. Wedmore. Suggestions for planer practice. 1800 w. Prac Engr-Jan. 2, 1918. No. 39142 A.
The Fawcus Herringbone Gear Planer.

Illustrated detailed description of this machine. 2000 w. Am Mach—Feb. 20, 1913. No. 39897.

Pneumatic Hammers

Pneumatic Hammers (Marteaux-Pilons

MACHINE WORKS AND FOUNDRIES

Recovery

Pneumatiques). A. Ihne. A study of the working action of the hammer, its effectiveness, scope of work, and the various types. Ills. 11,000 w. Rev de Mecan -May 31, 1913. No. 43075 E + F.

Pneumatic Tools

Use and Abuse of Pneumatic Tools. From Granite, Marble and Bronze. Sug-

gestions for the care of such tools and their repair. 5000 w. Compressed Air —Nov., 1912. No. 87797. Compressed Air as a Foundry Auxiliary. William H. Armstrong. From an address before the Newark, N. J., Found. Assn. Illustrates and describes important applications of pneumatic tools in the making of castings. 3000 w. Ir Age— Jan. 19, 1913. No. 39128 C.

Working Tests on a Single-Cylinder Pneumatic Hammer (Verbrauchsversuch an einem Luftdruckhammer mit nur einem Zylinder). Otto Fuchs. A study of time-space curves under varying conditions. Ills. 2700 w. Zeit des Ver deutscher Ing—Dec. 28, 1912. No. 39045 D.

Investigations with Pneumatic Tools (Untersuchungen an Pressluftwerkzeugen). R. Harm. Curves for feeds and speeds with the use of compressed air.

Ills. 3300 w. Zeit des Ver deutscher Ing

—Feb. 1, 1913. No. 40533 D.

Experimental and Theoretical Re-

searches on Pneumatic Tools (Experimentelle und theoretische Untersuchungen an Pressluftwerkzeugen). Ernest Groedel. Mathematical discussion. Ills. 2400 w. Zeit des Ver deutscher Ing—July 26, 1913. No. 44657 D.

Polishing

Method of Balancing Sander Cylinders. F. E. Schmidt. Illustrates and describes apparatus and methods used. 1500 w.

Am Mach—Dec. 26, 1912. No. 38544.
The Abbott Ball-Burnishing Process. Chester L. Lucas. Illustrated description of a method of finishing polished work by tumbling. 1000 w. Mach, N Y by tumbling. 1000 w. Dec., 1912. No. 37985 C.

Metal Polishing—Ancient and Modern. Seymour W. Rowsbar. Describes burnishing and polishing methods. 1600 w. Foundry-April, 1913. No. 41036.

See also Grinding, under Machine Works and Foundries.

The Bulldozer in Railway Shops. Lewis D. Freeman. An account of experiments recently made with the machine to determine what can be accomplished with twopiece dies. 1200 w. Am Engr-Feb., 1913. No. 39721 C.

Research Into the Rudiments of Work-Requirements in Press Forging (Ueber die Grundlagen zur Ermittlung des Arbeitsbedarfes beim Schmieden unter der Presse). Fr. Riedel. A study of the pressures required for various duties. Ills. 4400 w. Zeit des Ver deutscher Ing

-May 31, 1913. No. 43014 D. Pressed Metal Parts (Metall-Press-Describes the Franz Adler. presses for use with copper and brass and the large scope of their output. Ills. 3500 w. Zeit des Ver deutscher Ing-Aug. 30, 1913. No. 46036 D.

See Rivetters, under Hydraulic Machinery.

Press Work

Steel Balls as a Press "Working Fluid." Aug. Bauschlicher. The use of steel balls for punch and die work is illustrated and described. 2000 w. Am Mach—Nov. 21, 1912. No. 37666.

Modern Methods of a Press Working

Plant. Chester L. Lucas. Illustrates and describes work. 1500 w. Mach, N Y-

Dec., 1912. No. 37983 C.

Projectiles

The Manufacture of Armor-Piercing Projectiles. General Leandro Cubillo. Read before the Iron & Steel Inst. Considers the material used, the process of manufacture, hardening and tempering, and the manufacture of the cap. Ills. 3500 w. Ir & Coal Trds Rev—Sept. 5, 1913. No. 45185 A.

Puddling

The Reactions of the Puddling Process. Thomas Turner. Read before the W. of Scotland Ir. & St. Inst. Reviews causes that have affected this industry and considers how far it may be possible to improve on present procedure. 6000 w. Engng—Feb. 14, 1913. No. 40134 A. Reamer-Holders

Floating Reamer-Holders. Albert A. Dowd. Illustrates and describes designs to insure concentricity of work in horizontal and vertical machines. 1800 w. Mach, N. Y.-July, 1913. No. 43359 C.

Adjustable Reamers. George W. Burley. Drawings and descriptions of type. 1500 w. Mech Wld-Nov. 29, 1912. Serial.

st part. No. 38125 A.
Floating Reamer-Holders. Albert A.
Dowd. Illustrates and describes types.
1200 w. Mech Wld—Sept. 12, 1918.
Serial, 1st part. No. 45295 A.

Fluting an Odd-Sized Spiral-Toothed Tapered Reamer. George W. Burley. Drawings with detailed description of the work. 2000 w. Mech Wld—Sept. 5, 1913. No. 45149 A.

Recovery

The Reclamation of Non-Ferrous Met-Illustrated description of the equipment and practice of the Westinghouse

Repair Shop

MACHINE WORKS AND FOUNDRIES

Screw Machines

Electric & Mfg. Co. for the recovery of copper, tin, and lead. 2500 w. Foundry—April, 1913. No. 41034.

Repair Shop

New York's Meter Repair Shop. Illustrated description of the organization and facilities of the meter repair service of the Consolidated Gas Co. 2500 w. Gas Age—Feb. 15, 1913. No. 39822.

Rivetters

See same heading, under Hydraulic Machinery.

Rolling Mills

The New Rolling Mill of the Stamford German-Silver Company at Springdale, Conn., Manufacturers of German-Silver and Nickel Anodes. Illustrated description. 1700 w. Brass Wld-April, 1913. No. 41578.

Rolls

Seven-Roller Angle-Bar Straightening Machine. Illustrated description. 50 Engng—Jan. 3, 1913. No. 39159 A. The Relation of Channel-Iron

Openings to the Axis of Grooves (Ueber die Lage von U-Eisenkalibern zur Walz-linie). E. Werlisch. A study of the regulation of the flange heights. Discussion. Ills. 2000 w. Stahl u Eisen— Stahl u Eisen-Sept. 18, 1913. No. 46003 D.

Safety Appliances

Safeguarding Machinery at Hawthorne. Illustrates and describes how an electric company protects its shop employees from injury. 1200 w. Sci Am — April 12, 1913. No. 41178.

Safety Devices

Safeguards for Power Presses. ward K. Hammond. Illustrates and describes safety devices adopted. 3000 w. Mach, N Y-Nov., 1912. No. 37161 C.

Safeguarding Motor-Driven Apparatus. D. C. Pultney. Illustrates and describes devices for safeguarding machinery direct driven by electric motors. 1800 w. Elec Jour—June, 1913. No. 43228.

See Accident Prevention and Grinding,

under Machine Works and Foundries; also Accidents, under ELECTRICAL ENGI-NEERING, MISCELLANY.

Sawing Machines

Recent Developments in Metal Sawing Machines. Thomas R. Shaw. Illustrates and describes sawing machines of recent design. 1200 w. 1912. No. 37157 B. Cassier's Mag-Oct.,

The Development of the Saw and Sawing Machinery (Die Entwicklung der Sägewerkzeuge und Sägemaschinen). A history covering Wolff-Friedenau. ancient and modern forms of saws. Ills. 5000 w. Zeit f Werkzeug-Oct. 25, 1912. No. 87464 D.

Cold-Cutting Circular Sawing Ma-

chines for Heavy Duty (Kalt-kreissäge-maschinen mit hoher Arbeitsleistung). General description of various modern metal sawing machines. Ills. 1800 w. metal sawing machines. Ills. 1800 w. Zeit des Ver deutscher Ing—April 12, 1913. No. 42138 D.

See also Metal Cutting, under Machine

Works and Foundries.

Automatic Bar Saw. Illustrated description of a new saw for metal bars, with automatic feed and cutting-off mechanism. 1200 w. Engr, Lond—Oct. 17, 1913. No. 46252 A. Hack-Sawing Machines. Illustrates

and describes two recent types. A sawing-machine for foundry runners, and a sawing-machine for boiler-plate flanges. Engng—Oct. 17, 1913. 1000 w. 46244 A.

Special Applications of Cold-Sawing Machines. Gustav Wagner System, for Rail Material (Sonderausführungen von Kaltsägemaschinen, System Gustav Wag-ner-Reutlingen, für Bahnmaterial). Ed-uard Müller. General description of several models and examples of their use on rail. Ills. 1000 w. Glaser's Ann—Aug. 15, 1913. No. 46011 D.

Saw-Sharpening

Automatic Saw-Sharpening Machine. Illustrated description of a machine for sharpening cold-saws. 700 w. Engag— July 25, 1913. No. 44184 A.

Screw Machines

The Grant Automatic Screw Machine. Illustrated detailed description of a four-

spindle machine with novel features. 2000 w. Am Mach—Nov. 14, 1912. No. 87879. The "Acme" Multiple Spindle Automatic Screw Machine. Douglas T. Ham-Illustrates and describes the design, construction, operation, tool equipment, etc. 3500 w. Mach, N Y-Dec., 1912. Serial. 1st part. No. 37978 C.

Special Knurling Operations. Douglas T. Hamilton. Illustrates and describes practice for the Brown & Sharpe automatic screw machines. 1200 w. Mach, N Y—Dec., 1912. No. 37980 C.

Automatic Screw-Machine Equipment. Douglas T. Hamilton. Illustrated description of the tool equipment used on the National-Acme multiple-spindle automatic screw machines. 3500 w. Mach, N Y—Feb., 1913. Serial, 1st part. No. 39607 C.

Setting Up and Operating Automatic Screw Machines. Douglas T. Hamilton. Illustrates and describes applications to the "Acme" multiple-spindle automatic screw machine. 4000 w. Mach, N Y-May, 19 41787 C. Serial. 1913. 1st part. No.

Selection MACHINE WORKS AND FOUNDRIES

Shop Practice

Selection

Selecting the Correct Machine for the Work. Stuart Dean. Discusses the economical range of production for which each kind of machine should be adapted. 2000 w. Ir Age—Jan. 23, 1913. No. 39323 C.

Shapers

A Shaping Machine Efficiency Test. A. Lewis Jenkins. Describes interesting experiments to secure data on its mechanical efficiency. Ills. 2000 w. Ir Age—July 17, 1913. No. 43752 C.

Shears

Steam-Hydraulic Slab Shears. Illustrated description of powerful shears having new features. 2000 w. Engr, Lond—June 13, 1913. No. 43147 A.

Shop Appliances

Fixtures and Gages Used in Manufacturing the "Multigraph." Douglas T. Hamilton. Illustrates and describes devices used in the lathe, shaper, and milling machine. 2000 w. Mach, N Y—April, 1913. No. 40982 C.

Shop Costs

Shop Costs. W. C. Connelly. Read before the Am. Boiler Mfrs. Assn. Considers the subject as applied to boilers and like work. 1800 w. Boiler Maker—Sept., 1913. No. 45216.
Cost Estimating in Machine Construc-

Cost Estimating in Machine Construction. A. C. Jewett. A discussion of factors affecting cost and methods of estimating cost of manufacture. 1400 w. Mach, N Y—Sept., 1913. No. 44839 C.

Shop Efficiency

Possible Economies in Shop Transportation. Robert Thurston Kent. Explains devices which have resulted in reducing time between machine operations. 2500 w. Ir Age—Aug. 7, 1913. No. 44199 C.

Shop Hygiene

The Human Element in Industry. Winthrop Talbot. Explains the economies of proper attention to shop hygiene. 4500 w. Ir Age—Feb. 6, 1913. Serial, 1st part. No. 39667 C.

Shop Lighting

Illumination of Engineering Workshops by Gas, Electricity, and Oil. Franklin Thorp. Abstract of paper read before the Manchester Assn. of Engrs. Discusses illuminants in reference to cost, maintenance, reliability, etc. Ills. 2000 w. Mech Engr—Feb. 7, 1913. Serial, 1st part. No. 39912 A.

Machine Shop Lighting in Steel Mills. C. E. Clewell. Analysis, showing right and wrong methods. Ills. 4500 w. Am Mach. Feb. 20, 1913. No. 39900.

Industrial Lighting. Discusses means of making the best possible use of day-

light illumination. Ills. 2000 w. Sci Am Sup—Aug. 23, 1913. No. 44502.

Shop Practice

Piston, Piston Rod and Crosshead Repairs. George Black. Showing what can be done in the smaller shops without special tools or facilities for the work. Ills. 2000 w. Am Engr—Nov., 1912. No. 37303 C.

Fluting Angular Milling Cutters and Tapered Reamers. George W. Burley. Data sheet, tables and illustrated description. 2500 w. Mach, N Y—Nov., 1912. No. 37165 C.

American Shop Practice of the Fiat. Ethan Viall. Illustrates and describes features of the grinding, turret lathe, and milling work. 1200 w. Am Mach—Nov. 28, 1912. No. 37833.

The Manufacture of Revolver Frames. Ethan Viall. Illustrates and describes special milling fixtures and machines. 1200 w. Am Mach—Nov. 7, 1912. No. 37296.

Methods of a Marine Engine Builder. Robert Mawson. Illustrates and describes tools and methods used in a Jersey City shop. 1200 w. Am Mach—Dec. 26, 1912. No. 38541.

Building Gasoline Engines in Canada. D. O. Barrett. Illustrates and describes tool equipment and methods used. 1500 w. Am Mach—Dec. 5, 1912. No. 38058.

Motorcycle Work at the Pierce Shop. Ethan Viall. Illustrates and describes machines and fixtures used. 1500 w. Am Mach—Dec. 5, 1912. No. 38059.

Saving Space in a Steel Warehouse. Illustrates and describes a system of steel racks for the handling of bars and sheets. 800 w. Ir Age—Dec. 19, 1912. No. 38274 C.

Methods in a Colorado Pattern Shop. F. A. Stanley. Illustrates and describes practice at the Vulcan Works. 1600 w. Am Mach—Dec. 5, 1912. No. 38057.

Making Mine Car Housings and Wheels. F. A. Stanley. Illustrates and describes tools and operations used in a Colorado shop. 1500 w. Am Mach—Dec. 26, 1912. No. 38542.

Sheet Steel Work in a Salt Lake Shop. F. A. Stanley. Illustrates and describes operations in shearing, punching and bending triangular plates, preparatory to riveting in a conical form for settling tanks. 2000 w. Am Mach—Jan. 23, 1913. No. 39286.

Methods and Tools in Montana Shops. F. A. Stanley. Illustrates and describes interesting operations and tools in three shops where mining equipment and other

machinery is built and repaired. 2500 w. Am Mach.—Feb. 6, 1913. No. 39673.

Methods of the Autopress Shops. Gives examples of methods employed in shops where a high-speed automatic printing press is manufactured. Ills. 1000 w. Am Mach—Dec. 19, 1912. No. 38268.

Closing Bushes. J. Stormonth. Drawing and detailed description of such work. 2200 w. Mech. Wld—Nov. 22, 1912. No. 38026 A.

The Manufacture of Brake Beam Hangers. R. S. Mounce. Illustrates and describes methods used at the Cleveland shops of the Erie, by which the labor cost is only five cents each. 1000 w.

Am Engr—Dec., 1912. No. 38202 C.
Making Rolls for Paper Machinery.
Fred H. Colvin. Illustrated description
of a modern plant in which a variety of
roll turning and grinding operations is
performed. 1500 w. Am Mach—Dec.

19, 1912. No. 38270.

Workmen's Skill vs. Modern Machinery.
Fred H. Colvin. Illustrates and describes methods of making edge tools, practically by hand labor. 3500 w. Am Mach—Jan. 30, 1913. No. 39542.

Drilling and Milling in a Pioneer Auto Shop. Fred H. Colvin. Explains how machining methods have been developed to secure low-cost production. Ills. 1200 w. Am Mach—Jan. 23, 1913. No. 39283.

Developments in Machine Shop Practice. Report of the sub-committee on machine shop practice submitted at Dec. meeting of the A. S. M. E. A review of the most important improvements during the last ten years. 7000 w. Mach, N Y—Jan., 1913. No. 38722 C.

Machine Shop Practice of General Interest. Alexander Taylor. Illustrates and describes a few of the practices in vogue in plants of the Westinghouse Electric & Mfg. Co., 4500 w. Am Mach—Jan. 30, 1913. No. 39545.

Machining Gasoline Engine Parts. F. B. Jacobs. Illustrates and describes methods employed in making the Keystone gasoline engine. 700 w. Mach, NY—Jan., 1913. No. 38721 C.

Methods of an Electrical Vehicle Shop. Robert Mawson. Illustrates and describes special tools and operations. 1000 w. Am Mach—Jan. 9, 1913. No. 38944.

Measuring Accuracy. Illustrates and describes methods of ensuring accuracy in the workmanship of the Napier cars. 1000 w. Auto Jour—Jan. 18, 1913. No. 39456 A.

Shop and Machine Details from the White Shop. Illustrated description of details of this shop in Cleveland, O., and

of tools and methods. 1500 w. Am Mach
—Jan. 16, 1913. No. 39124.

Practice of Union Switch & Signal Co. Illustrates and describes some special machines and methods. 1800 w. Am Mach—Jan. 30, 1913. No. 39543.

Developments in Machine Shop Prac-

Developments in Machine Shop Practice During the Last Decade. Report of sub-committee on the principal improvements developed. 7000 w. Jour Am Soc of Mech Engrs—Feb., 1913. No. 40149 D.

Little Economies for the Machine Shop. Stuart Dean. Shop Suggestions. 1500 w. Ir Age. Feb. 6, 1913. No. 39668 C.

w. Ir Age. Feb. 6, 1913. No. 39668 C.

Making Small Parts on Screw Machines. Illustrates and describes interesting attachments employed in manufacturing the comptometer. 1800 w. Ir Age—Feb. 6, 1913. No. 39666 C.

Methods of Making a High Grade Car. Robert Mawson. Illustrates and describes some interesting drill jigs, well made index jigs and machine broachers, fixtures, etc. 2000 w. Am Mach—Feb. 6, 1913. No. 39670.

Methods Used in Making Pneumatic Tools. Fred H. Colvin. Illustrates and describes tools and work. 2500 w. Am Mach—Feb. 27, 1913. No. 40140.

More Interesting White Shop Methods. Fred H. Colvin. Illustrates and describes drilling fixtures and machines for cylinder and crankshaft work. 1700 w. Am Mach—Feb. 13, 1913. No. 39842.

Wafer Safety Razor Blade Processes. Ethan Viall. Illustrates and describes manufacturing operations. 1700 w. Am Mach—Feb. 13, 1913. No. 39841.

Producing High-Speed Drilling Machines. Ethan Viall. Some of the methods used for machining the principal parts are illustrated and described. 1500 w. Am Mach — March 13, 1913. No. 40421.

Bettering the Efficiency of the Structural Shop. Edwin J. Knapp. Discusses the drawing-room, layout, fitting and crane service. 4000 w. Engineering Magazine—April, 1913. No. 40913 B.

Lathe Manufacturing in the Northwest. F. A. Stanley. Illustrates and describes methods and tools employed in a shop at Seattle, Wash. 1500 w. Am Mach—March 6, 1913. No. 40326

shop at Seattle, Wash. 1500 w. Am Mach.—March 6, 1913. No. 40326.

Shop Practice of the Willys-Overland Co. Douglas T. Hamilton. Illustrates and describes the machinery of a four-throw crankshaft, and other parts. 3000 w. Mach, N Y — March, 1913. No. 40267 C.

Automobile Manufacturing Methods. Douglas T. Hamilton. Illustrates and describes interesting milling jigs and fixtures used in producing the Reo mo-

Shops

3500 w. tor car. Mach, N. Y.—July, 1913. No. 43364 C.

Tap Fluting Cutters. Illustrates and describes methods and cutters used. 1500 Mach, N Y — March, 1913. No. 40270 C.

Making the Red-E Tool Holder. Chester L. Lucas. Illustrated description of specialized manufacture in which broaching plays an important part. 1700 w. Mach, N Y-May, 1913. No. 41793 C.

Milling Operations on the Velie 40 H. P. Cylinders and Crank Case. C. T. Shaefer. Illustrates and describes the fixtures and methods used. 1200 w. Horseless Age — June 25, 1913. No.

Making Ball Players' Shoe Plates. F. Horton. Illustrates and describes tools used for blanking, swaging, piercing, forming and grinding. 1500 w. N Y—June, 1913. No. 42573 C.

Making Steel Type. Chester L. Lucas. Illustrates and describes methods used in the manufacture. 2500 w. Sci Am Sup—June 14, 1913. No. 42821.

Machining and Assembling Automobile Engines. Harry C. Spillman. Illustrated description of methods used in

lustrated description of methods used in a Detroit plant. 2500 w. Ir Age—July 24, 1913. No. 43848 C.

Making a Sheet-Steel Miter-Box in the Punch Press. Describes some interesting punches and dies used in producing miterboxes from sixteen-gage sheet-steel. Ills. 2000 w. Mach, N. Y.—July, 1913. No. 43360 C.

Some Machine and Fitting Shop Wrinkles. F. R. Parsons. The present article explains how to bend tubes without distortion, cutting gauge glasses, drawing the temper of a file, annealing tool steel, &c. 800 w. Mech Wid—Aug. 8, 1913. Serial, 1st part. No. 44455 A.

Some Slotting Machines and Tools Used in the Pond Shops. Alfred Spangenburg. Describes methods of equipping and tooling slotters for greater effi-ciency. Ills. 1200 w. Mach, N Y— Aug., 1913. No. 44082 C.

Machining Automatic Chucking Machine and Lathe Turrets. C. M. Conradson. Illustrates and describes special boring and planer fixtures. 900 w. Mach, N Y—Sept., 1913. No. 44837 C.

Method of Machining an Automobil-Worm-Housing. Albert A. Dowd. Illu trates and describes the tool equipment and machining operations. 1500 w. and machining operations. 150 Horseless Age—Sept. 24, 1913. No.

Methods Used in Manufacturing the Jones Speedometer. Edward K. Ham-Describes making the parts, assembling and testing the finished instruments. Ills. 3000 w. Mach. N Y -Sept., 1913. No. 44846 C.

See also same heading, under RAILWAY ENGINEERING, Motive Power and Equip-

Shops

A Cleveland Sheet Metal Working Plant. Illustrates and describes the Plant. Illustrates and describes the equipment and shop arrangement of a modern factory. 1200 w. Ir Age—Nov. 14, 1912. No. 87751 C.

Massillon Bridge & Structural Company's Shop. Illustrates and describes details of shop arrangement and oil burning forge equipment. 1000 w. Ir Age
—Nov. 21, 1912. No. 87728 C.

Park Works, Manchester. Illustrated description of new works at Newton description of new works at Newton Heath for manufacturing pumps, valves, humidifiers, cast iron tanks, fire extinguishing appliances, etc. 2000 w. Engr, Lond—Nov. 1, 1912. No. 37551 A.

A Large Machine Plant in Colorado.
F. A. Stanley. Illustrates and describes features of a Denver shop. 1600 w. Am Mach—Nov. 28, 1912. No. 37882.

A Colorado Farm Implement Plant.
E A Stanley. Special tools used in a

F. A. Stanley. Special tools used in a Denver, Colo, shop are illustrated and described. 2000 w. Am Mach—Nov. 21, 1912. No. 37661. A Sheet Metal and Stamping Plant.

Illustrates and describes the equipment and shop arrangement. 1500 w. Met Work—Nov. 8, 1912. No. 37327.

Improving the Efficiency of a Check-Room. R. H. Wadsworth. An illustrated account showing conditions that for-merly existed and the increase in effi-ciency in the check-room system. 1500 w. Mach, N Y—Dec., 1912. No. 37979 C. Lessons of Gilbert & Barker Shops. John Nelson. Illustrated description of

works at Springfield, Mass. Acetylene generator house designed to minimize explosion damage. 2500 w. Ir Age—Jan. 2, 1913. No. 38752 C.

A Modern Plant for Automobile Parts. Illustrated description of Detroit works designed and equipped for quantity manufacture. 4500 w. Ir Age—Jan. 2, 1913. No. 38750 C.

Equipment of Union Switch & Signal Co. Illustrates and describes features of the equipment of the foundry, forge shop, and power house. 1600 w. Am Mach—Feb. 6, 1913. No. 39672.

A Large Machine Shop in Spokane. F. A. Stanley. Illustrates and describes special tools used in building machinery for mining, logging, irrigating, etc. 1500 w. Am Mach—Feb. 20, 1913. No. 39898.

A Large Montana Mining Machine

Shops

Shop. F. A. Stanley. Illustrates and describes a shop for building and repairing mining apparatus with the aid of special machines and fixtures. 2500 w. Mach—Feb. 13, 1913. No. 39839.

A Modern Sheet Metal Working Shop. Illustrated description of a shop in Cambridge, Mass., designed to provide ample light and space for workmen. 2500 w. Met Work-March 14, 1913. No. 40471.

Plant for Making Automobile Tool Boxes. Illustrated description of a Cleveland, O., sheet metal working shop for making automobile accessories. 2000 w. Ir Age—March 13, 1913. No. 40631 C. Layout and Building Details of a Ma-

chine Shop. Plan. drawings, and description of a new plant at Bridgeport, Conn. 1500 w. Eng Rec—March 29, 1913. No. 40957.

Plant of the Duff Mfg. Company, Pittsburgh. Illustrated description of an interesting factory in its construction features and arrangements. 2500 w. Ir Age

—April 10, 1913. No. 41152 C.
A Saxon Engineering Works. Charles
R. King. Illustrated description of the methods, equipment and products. First of two articles. 3500 w. Engineering Magazine—May, 1913. No. 42487 B.

A Saxon Engineering Works. Charles R. King. Illustrated description of the characteristic shop methods, machine tools and processes. 2000 w. Engineer-ing Magazine—July, 1913. No. 43098 B. Plant of Henry Vogt Machine Com-pany. G. D. Crain, Jr. Illustrates and

describes the modern equipment of the works at Louisville, Ky. 2200 w. Ir Age—May 22, 1913. No. 42305 C.

A Visit to a Lincoln Engineering

Works. Illustrated detailed description of the works and equipment, with an outline of their history. 4500 w. Engr, Lond—May 23, 1913. No. 42757 A.

St. Lawrence Bridge Company's New Shop. Describes the arrangement and equipment of a \$1,000,000 plant constructed at Montreal, especially for fabrication of the Quebec bridge superstructure. Ills. 2500 w. Eng Rec.—June 7, 1913. No. 42711.

Lang's Lathe Works at Johnstone. Illustrated description of the shops, and of

some features of the product. 2500 w. Engng—June 6, 1913. No. 42883 A.

The Packard Motor Car Company, Detroit. Oliver J. Abell. Illustrated general description of the purposes, plant methods, and organization for the building of motor cars and trucks. 2500 w. Ir Age-June 5, 1913. Serial. 1st part. No. 42658 C.

The Layout, Design and Equipment of Industrial Works. A. Home Morton.

Condensed from paper read before the Liverpool Engng Soc. Discusses general considerations, arrangement, power, design and construction, etc. 4500 w. Ind Engng—July, 1913. No. 43460 C.
Modernizing an Old Manufacturing Plant. Illustrations and detailed de-

scription of changes made in a plant at Windsor Locks, Conn. 1500 w. Ir Age
—July 17, 1913. No. 43753 C.

A Modern Plant for Building Pumps. Charles A. Hirschberg. The new shop of the Cameron Steam Pump Works, at Phillipsburg, N. J., is described, as well as the product. Ills. 2500 w. Compressed Air—July, 1913. No. 43993.

Manufacture of Switches and Frogs.

Illustrated description of the Cincinnati plant of the Weir Frog Co. 2500 w. Ry & Engng Rev—June 28, 1913. No. 43358.

The Works of Messrs. Thomas Shanks & Co., of Johnstone. Illustrated account of the range of work covered by this firm, describing some of the latest machines. 2500 w. Engng-June 20, 1913. No. 43387 A.

A Complete Elevator Manufacturing Plant. Illustrated description of a recently completed plant in Honesdale, Pa. A combination of the standard monitor roof with saw tooth construction, with steel sash. 2000 w. Ir Age—July 10, 1913. No. 43493 C.

Queen's Engineering Works, Bedford. Illustrated description of the general layout and details of the shops. Plate. 3000 w. Engr, Lond—July 4, 1913. No. 43722 A

The New Works of Messrs. Nasmyth, Wilson & Co., Ltd., Patricroft, Manchester. Brief review of the history of this firm, with detailed description of the works. 6000 w. Ry Gaz, Lond-

June 27, 1913. No. 43634.

The Works of Messrs. Ransomes & Rapier, Ltd. Illustrated detailed description of the Waterside Iron Works, Ipswich, with an outline of their history. 4000 w. Engng—July 18, 1913. No.

The Works of Messrs. Reavell & Co., Ltd. Illustrated detailed description of the Ranelagh Works, Ipswich, and methods. Plates. 7500 w. Engng-June 27, No. 43640 A.

Engineering Works at Broadheath. Illustrates and describes new workshops of George Richards & Co., Ltd. 1700 w. Engr, Lond—Aug. 1, 1913. No. 44322 A.

The Youngstown Sheet and Tube Company. Illustrated description of the open-hearth plant, blooming mill and other details of the recent important ex-

Tools

tensions. 3000 w. Ir Age—Aug. 14, 1913. No. 44341 C.

The Works of Messrs. W. H. Allen, Son and Co., Limited. Brief review of the history and principal manufactures, with illustrated description of the present works. 5000 w. Engng—July 25, 1913 No. 44181 A.

1913. No. 44181 A.

The Fried. Krupp Works, Friedrich-Alfred Hütte, Rheinhausen. Illustrated description of the most completely equipped works of their kind in Germany. Plates. 2000 w. Engng—Sept. 5, 1913. Serial, 1st part. No. 45153 Å.

Increasing the Output While Rebuilding a Shop. Illustrated description of the reconstruction of the Canadian Locomotive Co.'s works, especially the equipment and arrangement of the foundry. 2500 w. Foundry—Sept., 1913. No. 44859.

A Combined Office and Workshop. F. Southey. Describes an addition to the works of Siemens Bros. & Co. at Woolwich, consisting of a 5-story building and a 1-story workshop. Ills. 2000 w. Engr, Lond—Aug. 29, 1913. No. 45043 A.

The Trumbull Sheet and Tin Plate Mills. Illustrates and describes the equipment of new works at Warren, Ohio. 2500 w. Ir Age—Sept. 11, 1913. No. 45052 C.

See also Factory Buildings, under Civil Engineering, Construction; and Shops, under Railway Engineering, Motive Power and Equipment.

Slotting

A Semi-Automatic Slotting Fixture. J. H. Harris. Illustrated description of a fixture used by the Remington Typewriter Co. 500 w. Mach, N Y—Nov., 1912. No. 37167 C.

Special Machines

Specialized Machine Tool Equipment. Douglas T. Hamilton. Illustrates and describes special machines used in the manufacture of drilling machines. 1500 w. Mach, N Y—Aug., 1913. No. 44077 C.

Special Tools

Special Tools of an Elevator Company.
Robert Mawson. Illustrates and describes a number of special attachments. 1500
w. Am Mach—Nov. 28, 1912. No. 37836.

Graduating Machine and Other Tools. F. A. Stanley. Illustrates and describes special equipment used in the manufacture of drilling machines. 8000 w. Am Mach—Nov. 14, 1912. No. 37882.

Tanks

Manufacturing Cold Drawn Steel Shells. Illustrates and describes the new plant of the Prest-O-Lite Company in Indianapolis, making tanks for distributing acetylene gas for lighting and welding purposes. 2500 w. Ir Age—Sept. 4, 1913. No. 44953 C.

Tempering

Experiments on Tempering (Sur les essais de trempe). G. Charpy. Criticisms on paper presented by M. Osmond to the Commission français des Méthodes d'essai des matériaux de construction. 3000 w. Rev de Metall—March, 1913. No. 40590 H.

Thermometers

The Manufacture of Thermometers. Illustrates and describes processes employed in making engineers' industrial and clinical thermometers. 2500 w. Ind Engng—March, 1913. No. 40719 C.

Threading

Knock-off Arbors for Threaded Work. Albert A. Dowd. Illustrates and describes arbors adapted for various operations. 2800 w. Mach, N Y—Aug., 1913. No. 44078 C.

Tools

Home Made Tools in a Colorado Shop. F. A. Stanley. Illustrates and describes an indexing appliance, an inverted punching machine, shears and punches and a special crane. 1500 w. Am Mach—Dec. 19, 1912. No. 38261.

Special Tools Used on Marine Engines.

Special Tools Used on Marine Engines. Robert Mawson. Illustrates and describes interesting tools and operations in a Jersey City shop. 1200 w. Am Mach—Dec. 19, 1912. No. 38264.

Special Tools in a Pennsylvania Shop. Robert Mawson. Illustrates and describes some interesting drilling-machine heads and drill jigs, a novel die-sinking attachment, etc. 1000 w. Am Mach—Jan. 2, 1913. No. 38733.

Tools for a High Grade Automobile. Robert Mawson. Illustrated description of accurately made tools and methods employed. 2000 w. Am Mach—Jan. 23, 1913. No. 39281.

Locomotive Boiler Tube Tools. Walter R. Hedeman. Illustrates and describes tools giving efficient service in one of the largest repair shops in the United States. 2000 w. Am Engr.—Jan., 1913. No. 38965 C.

Some Tools Used by the Gramm Motor Car Co. P. Steiner. Illustrates and describes jigs, fixtures and testing devices used in auto truck manufacture. 2500 w. Mach, N Y—Jan., 1918. No. 38725 C.

Tools for Boiler Makers and Their Uses. W. D. Forbes. The present number considers single piece tools. Ills. 1500 w. Boiler Maker — Feb., 1913. Serial, 1st part. No. 39829.

Tools for Multiple Plunger Presses. Charles Doescher. Describes the con-

Welding

w. Mech Wld-Oct. 17, 1913. Serial, 1st part. No. 46234 A.

struction and use of the punches and dies as applied to this type of press. 2500 w. Mach, N Y—Feb., 1913. Ills. 39606 C.

Improved Tool for Turning and Screw Threading. Illustrates and describes an invention of H. S. Land, and its operation. 1800 w. Prac Engr-Feb. 20, 1913. No. 40310 A.

Punch and Die Made in Sections. A. L. Monrad. Illustrated account of the making of a punch and die for producing the type bar plates for linotype machines. 1500 w. Mach, N Y-March, 1913. No. 40268 C.

Manufacturing Broaching Machines and Tools. Illustrated description of the

March 27, 1913. No. 40885.

Special Tools for Printing Presses.
Robert Mawson. Illustrations, with brief descriptions. 1100 w. Am Mach—March 13, 1913. No. 40422.

Special Tools for Electric Trucks. Robert Mawson. Describes a cam equalizing device and some indexing applied to drill jigs, etc. Ills. 1200 w. Mach—Feb. 20, 1913. No. 39899.

Some Tools in an Idaho Machine Shop. F. A. Stanley. Illustrates and describes machines and tools built for various uses. 1500 w. Am Mach-Jan. 2, 1913. No. 38735.

Tools and Methods in Logging Engine Work. F. A, Stanley. Illustrates and describes special devices and methods used in a Seattle, Wash., shop. 700 w. Am Mach—March 13, 1913. No. 40419.

Making Foundry Tools by Short-Cut Methods. Joseph Horner. Illustrates and describes simple methods of molding and casting iron flasks, with data on pattern-making. 2500 w. Foundry—April, 1913. No. 41035.

Hints on Jig and Tool Design. The present number considers the duties of a jig and tool specialist. Ills. 1200 w. Mech Wld—April 25, 1918. Serial. 1st

part. No. 41923 A.

Small Tools—The Basis of Economic Manufacturing. W. J. Kaup. Fifth of a series of articles on works management. Discusses the subject of tool estimates, the cost of small tools, their design, the materials used, and related subjects. 2500 w. Elec Jour—Sept., 1913. No. 45103. Economy in Tool Design. E. H. Pratt.

Gives two extreme cases—one in which the cost was increased and the other decreased. Ills. 1200 w. Mach, N Y—Sept., 1913. No. 44845 C.

Correct Cutting Angles for High-Speed Steel Tools. Gives charts for the Gisholt tool grinder, explaining their use. 1200

See also Machine Tools, and Pneumatic Tools, under Machine Works and Foundries; and Tool Steel, under Mining and Metallurgy, Iron and Steel. Type Machine

The Vetter Steel Type Making Ma-tine. Chester L. Lucas. Illustrated description of a recent development in machinery for making steel type for typewriters. 1500 w. Mach, N Y—Aug., 1913. No. 44083 C.

Type Making

Making Steel Type. Chester L. Lucas. Information concerning methods of cut-ting letters in steel by hand and machine. Ills. 2500 w. Mach, N Y-April 1913. No. 40980 C.

Undulator

The Undulator. A. S. Rogers. IIlustrates and describes a modified reciprocator for ornamental lathes. 2500 w. Sci Am Sup-July 5, 1913. No. 43430.

Welding

Electric Welding. L. J. Hibbard. Discusses methods and their applications, describing welding machines and illustrating examples of work. General discussion. 6000 w. Pro Ry Club of Pitts-burgh—Sept. 27, 1912. No. 37909 C. More Notes on Electric Welding. V.

D. Green. Read before the Birmingham & Dist. Elec. Club. Refers to a paper read three years ago and considers arc and butt welders in detail and recent developments. Ills. 8500 w. Elec Rev, Lond-Nov. 15, 1912. Serial. 1st part. No. 37804 A.

Autogenous Welding of Aluminium-Copper and Its Alloys. Dr. F. Carnevali. Abstract of paper read before the Inst. of Metals. Report of experimental researches on oxy-acetylene autogenous welding of metals other than iron. Ills. 2500 w. Mech Engr—Oct. 25, 1912. Serial. 1st part. No. 37291 A. Oxy-Acetylene Welding for Ordinary

Operation. James Steelman. Illustrates

and describes practical uses of the welding torch. 1400 w. Cassier's Mag—Oct., 1912. No. 37156 B.

Arc Welding. J. F. Lincoln. Reviews the history of the welding of metals by the use of the electric arc, describes types of arc welders, etc. 2800 w. Am Found Assn—Del., 1912. No. 38615 N. Welding and Cutting With Oxy-Acety-lene Gas. M. S. Plumley. From a pa-

per read before the Ir. and St. Elec. Engrs. An account of the wide application of the process, with some compara-4500 w. Ir Trd Rev-Dec. tive costs. No. 38054. 5, 1912.

Welding by Machinery. James Steel-Illustrates applications of the

acetylene-oxygen torch. 5000 w. Cassier's Mag—Nov., 1912. No. 38365 B. Welding of High Pressure Pipe Lines. Leon B. Jones. Read before the Pacific Coast Gas Assn. Illustrates and describes methods and gives information concerning the work. 3500 w. Engng—Dec. 7, 1912. No. 38082. 3500 w.

Electric Resistance Welding. P. Buch-Read before the Manchester Sec. of the Inst. of Elec. Engrs. Explains the advantages discussing the current supply, method of operation, applications, reliability, etc. 3000 w. Ir & Coal Trds Rev—Jan. 3, 1913. No. 39176 A.

Electric Arc Welding on the Pacific Illustrated account of the experience of two electric railways in rehabilitating worn track and equipment by building up with new metal welded into place by the electric arc. 1800 w. Elec Ry Jour—Jan. 11, 1913. No. 39111.

Some Notes on Welding. A. C. Gough. Discusses the condition of the fire, fluxes,

principles of welding and forging, the welding heat, etc. Ills. 2000 w. Mech welding heat, etc. Ills. 2000 w. Wld-Jan. 3, 1913. No. 39151 A.

The Essentiality of Autogenous Welding of Different Kinds of Steel and Iron, and Its Practical Application. Max Bermann. Read before the Int. Assn. for Test. Mat. Considers conditions essential to perfect welding. 1500 w. Chem Engr.—Jan., 1913. No. 39501 C.

Electric Welding Applied to Boiler Work. Illustrates and describes repair jobs made in the shops at Elizabethport. N. J. 2000 w. Boiler Maker—Feb., 1913. No. 39828.

Oxy-Acetylene Welding and Cutting. Henry W. Jacobs. Observations on the development of this art in European commercial and railway repair establishments. Ills. 1500 w. Ry Age Gaz— March 14, 1913. No. 40658.

Electric Resistance Welding. P. Bucher. Abstract of a paper and discussion at Manchester, Eng. Briefly considers the methods of electric welding and the applications. 2800 w. Elect'n, Lond—Feb. 21, 1913. No. 40304 A.

Autogenous Welding. Discussion at Atlanta, Ga., Jan. 20, 1913. 8500 w. Pro S & S-W Ry Club—Jan., 1913. No. Discussion at

42258 C. Electric-Arc Welding and Other Features of the San Francisco Shops. Gives particulars of different kinds of repair work. Ills. 2000 w. Elec Ry Jour work. Ills. 2000 w. May 17. 1913. No. 42231.

Best Methods of Welding Superheating Tubes, and Tools Used for Same. Abstract of a committee report before the Master Boiler Makers' Assn. Ills. 1500 Boiler Maker — June, 1913. 42969.

Electric Welding and Motor Rejuvenation. Illustrates and describes methods used by the Third Ave. railroad of New York, on many forms of electric welding and also rejuvenating two types of motors. 1200 w. Elec Ry Jour—June 21, 1913. No. 43116.

Investigations on Electric Resistance Welding by the Point Process (Untersuchungen über elektrische Widerstandsechweissung nach dem Punktverfahren). Otto Fuchs. A study of the process and some microstructures of welds so made. Ills. 6000 w. Elek u Masch-June 8, 1913. No. 43046 D.

The Use of Autogenous Welding in the Railway Repair Shop (Anwendung der autogenen Schweissung in Eisenbahn-Reparaturwerkstätten). Th. Kautny. A brief review of the oxyacetylene process, and work to which it is adapted. Ills. Serial. 1st part. 3500 w. Gläser's Ann—May 15, 1913. No. 43017 D.

The Adapability of Electric Welding. George Hills. Brief article giving methods and data. Ills. 1200 w. Chem Engng-July, 1913. No. 43489 C.

A New Arc Welding Machine. Illustrated description of the application of the multiple unit principle to this work. 1500 w. 43754 C. Ir Age-July 17, 1913. No.

Welding Boiler-furnace Flues. J. Leslie. Calls attention to points of importance in successful work. Ills. 3000 w. Mech Wld—June 20, 1913. No. 43388 A.

Thermite for Naval Use. Louis E. rowne. Illustrates applications of Browne. thermite welding and explains its great usefulness. 600 w. Sci Am Sup-Aug. 23, 1913. No. 44501.

Electric and Autogenous Welding and Cutting in Foundry and Other Opera-(Elektrisches und autogenes Schweissen und Schneiden in Giessereien und anderen Betrieben). O. Cramer. A review of some welding operations made possible by these means. Ills. Serial, 2400 ₩. 1st part. Giess-Zeit—July 1. 1913. No. 44624 D.

Thermit Welding. Alfred J. Higgin. Discusses the subject particularly in reference to joining tramway rails for electrical purposes. Ills. 2000 w. Aust Min Stand—Sept. 11, 1913. Serial, 1st part. No. 45835 B.

Use of the Oxy-Acetylene Torch in Foundries. H. Cole Estep. Explains how risers, shrink-heads, etc., are removed economically by this process, giving data

Alloys

on welding cast iron and steel. Ills. 4000 w. Foundry-Oct., 1913. Special. No. 45710 C.

See also Boilers, under Steam Engineerina.

Wire

The Manufacture of Wire and Cable. H. O. Blatt. Illustrated description of the successive manufacturing stages, and the machine used. 5800 w. Can Elec News—Feb. 1, 1913. No. 39569.

Wire Drawing

Designing Wire Forming Machines. E. Thompson. Gives the design of G. E. Thompson. an automatic forming machine for the production of a simple object from a coil of wire. Ills. 1500 w. Am Mach—Dec. 19, 1912. No. 38267. Notes on Early Wire-Drawing Prac-

tice. Percy Longmuir and Joseph Kenworthy. Illustrated review of the history of wire-drawing. 3500 w. Engng—April 18, 1913. No. 41770 A.
See also Wire Mills, under MINING AND METALLURGY, Iron and Steel.

Woodworking Millwrighting and Machine Wood-Alexander T. Deinzer. working. marks on the expense of misworked machinery, the abuse of shafting, &c. 2500 w. Wood Craft—Aug., 1913. No. 44194.

Wrinkles in Woodstaining for Cabinet-A. H. H. Haines. Discusses mahogany and walnut and their special features for the finisher, ebony and other blocks on woods, fuming, &c. 2500 Wood Craft—Aug., 1913. 44197.

A Special Dovetailing Job in Machine Woodworking. James F. Hobart. Illustrated detailed description of the work. 2500 w. Wood Craft-Aug., 1913. No. 44196.

Wood Working Shops (Holzbearbeit-ungswerkstätten). W. Vorwerck. Plans for arrangement, equipment and costs of shops. Ills. Serial, 1st part. 1800 w. Zeit für Werkzeug-July 5, 1913. No. 44671 D.

Workshops

The Engineering Workshops of the University of Sheffield. George W. Burley. Illustrates and describes the mechanical equipment and methods of instruction. 2000 w. Mach, N Y-May, 1913. No. 41791 C.

Work Supports

Intermediate Work Supports. George Illustrates and describes W. Burley. methods used—the steady rests, machine jacks, etc. 1400 w. Mech Wld—Jan. 31, 1913. Serial, 1st part. No. 39789 A.

MATERIALS OF CONSTRUCTION

Abrasives

Carborundum and Aloxite. Describes these two abrasives and their manufacture. Both are products of the electric furnace. 2000 w. Ry Mas Mech—May, 1913. No. 42204 C.

Alloys

Chemical Methods for Studying Alloys (Sur la Méthode Chimique pour l'Étude des Alliages). M. A. Portevin. Reviews the utility of such methods, with examples. Ills. 1800 w. Rev de Metall—Nov., 1912. No. 37503 H.
Alloys of Platinum and Aluminum (Sur

les Alliages du Platine avec l'Aluminium). M. Chouriguine. An account of the experimental work done by the author, his apparatus, and a metallographic study of the results. Ills. 2500 w. Rev de Metall-Nov., 1912. No. 37502 H.

Duralumin (Duralumin). Leo M. Cohn. Presents some of the properties of this alloy which contains over 90 per cent pure aluminum, and which is stronger and harder than the base metal, also its uses in electrical and mechanical con-structions. Diagrams. Serial. 1st part. 4800 w. Elek u Masch—Sept. 29, 1912. No. 37471 D.

Notes on the Metallography of Alloys. William Campbell. Notes on the three groups of white metals and a comparison with the structure of the bronzes. Ills. 8000 w. Bul Am Inst of Min Engrs—Dec., 1912. No. 38368 F. Copper Alloys for Motor Car Service.

William H. Barr. Information concerning the basic ingredients, copper, tin, zinc and lead, and the high copper alloys 3000 used in motor car construction. w. S A 38568 N. E Bul-Nov., 1912. No.

Copper Alloys for Motor Car Service.
W. H. Barr. Read before the Detroit
Soc. of Auto Engrs. Information concerning copper, tin, zinc and lead and
their combinations. 3500 w. Foundry—
Dec., 1912. No. 37991.

Alloys of Cobalt With Chamber and

Alloys of Cobalt With Chromium and Other Metals. Elwood Haynes. Describes researches with this alloy. 1500 w. Brass Wld-Jan., 1913. No. 39346.

Wittorff's Iron - Carbon Equilibrium Diagram. Bradley Stoughton. Abstract translation from the Russian of a study of iron-carbon alloys. Ills. 2500 w. Bul Am Inst of Min Engrs-Feb., 1913. No. 40157 F.

Alloys

Some Alloys Suitable for Instrument Work. W. Rosenhain. Read before the Optical Convention. Calls attention to certain alloys, not ordinarily employed, which appear to possess properties which render the mof special value for instrument making. 2500 w. Sci Am Sup—Feb. 8, 1913. Serial, 1st part. No. 39723.

Alloys of Cobalt with Chromium and Other Metals. Elwood Haynes. A report of research work. Short discussion. 2200 w. Bul Am Inst of Min Engrs-Feb., 1913. No. 40159 F.

Some Experiments on the Effect of Sul-

phur on Copper. Erwin S. Sperry. Gives experiments which show the irregularities due to the presence of sulphur. 2000 w. Brass Wld—March, 1913. No. 40695. The Structure of Acicular Alloys (Sur

les constituants en aiguilles des alliages). Felix Robin. A study of the needle formations in aluminum bronzes and special tin alloys. Ills. 1200 w. Bul Soc d'Encour—Jan., 1913. No. 40586 E + F.
I. Determination of the Position of Ae3

in Carbon-Iron Alloys. H. M. Howe and A. G. Levy. II. Thermal and Microscopical Examination of Professor Howe's Standard Commercial Steels. G. K. Burgess, J. J. Crowe, and H. S. Rawdon. gess, J. J. Growe, and II. S. III. Discussion of the Existing Data as to the Position of Ae3. H. M. Howe. the Position of Ae3. H. M. Howe. Three connected papers. Ills. 21,500 w. Bul Am Inst of Min Engrs—June, 1913. No. 43261 F.

Test Bars for Non-Ferrous Alloys. Jesse L. Jones. Outlines work to determine a standard bar, giving tests and conclusions. Ills. 2200 w. Am Inst of Metals—Sept., 1912. No. 43291 N.

The Effect of Stretching on the Properties of Metallurgical Products (Influence de l'étirage sur les propriétés des produits métallurgiques). Leon Guillet. Tabulated results of a series of experi-ments. 4000 w. Rev de Metal—June, ments. 4000 w. 1 1913. No. 43065 H.

Electro-Analysis of the Copper Alloys. J. G. Fairchild. Gives suggested procedure. 2000 w. Met & Chem Engag—

July, 1913. No. 43485 C.

Alloying Aluminum with the Rarer Metals. C. H. Ivinson. Read before the British Found. Assn. Explains the peculiar behavior of this white metal when mixed with other metals, and how the physical properties are affected. 2000 Foundry-Aug., 1913. No. 44094.

The Determination of Oxygen in Copper and Brass. T. West. Read before the Inst. of Metals. Deals with the methods used and describes experiments carried out. Ills. 3000 w. Mech Engr—Sept. 5, 1913. No. 45148 A.

Theories on Metallic Alloys and Their Industrial Applications (Les théories sur les alliages métalliques et leurs applica-tions industrielles). A. Portevin. A and crystalline dissimilarity of alloys and factors influencing their crystalline structure. 10400 w. Mem Soc Ing Civ de France-June, 1913. No. 45302 G.

Aluminum

The Hardness of Aluminum-Silver Alloys (Sur la dureté des alliages aluminum-argent). G. Le Grix and W. Broniewski. A new instrument for testing these alloys and the experiments performed. Ills. 2500 w. Rev de Metall-Aug., 1913. No. 45326 H.

Nomenclature of Non-Ferrous Alloys. Dr. G. K. Burgess. Discusses the need of making provision for more orderly naming of non-ferrous alloys. 1500 w. Am Inst of Metals—Oct., 1913. No. 46283 N.

Recent Improvements in Non-Ferrous Alloys. C. Vickers. Outlines improvements effected by the use of recently discovered elements. 5000 w. Foundry—

Oct., 1913. Special. No. 45706 C.
Report of Official Chemists of the
American Institute of Metals, 1913. Carl F. Woods. Review of advances made in new alloys, utilization of rare metals, and other subjects of interest to metallurgists. 4000 w. Am Inst of Metals—Oct., 1913. No. 46280 N.

The Approximate Melting Points of Some Commercial Copper Alloys. H. W. Gillett and A. B. Norton. Reports tests and methods used in a study of commercial casting alloys. 2000 w. Am Inst of Metals—Oct., 1913. No. 46279 N.

See also Castings, under Machine

Works and Foundries.

Alloy Steels

Notes on Ruff's Carbon-Iron Equilibrium Diagram. Henry M. Howe. critical discussion. Ills. 16700 w. Bul Am Inst of Min Engrs-Nov., 1912. No. 37546 F.

Analysis of the Total Carbon in Steels and Ferro-Alloys by Combustion With Compressed Oxygen (Dosage du Carbone Total des Aciers et des Ferroalliages par Combustion sous Pression d'Oxygène). P. Mahler and E. Goutal. Describes apparatus, method of conducting analysis, and some results. Ills. 7000 w. Rev de Metall—Oct., 1912. No. 37498 H.

Changes in the Physical Properties of Aluminum and Its Alloys, with Special Reference to Duralumin (Aenderungen der physikalischen Eigenschaften von Aluminium und dessen Legierungen unter besonderer Berücksichtigung des Dura-lumins). L. M. Cohn. A study of the

MATERIALS OF CONSTRUCTION

Galvanized Iron

effects of air and water. 3000 w. Elek u Masch—May 18, 1913. No. 43041 D. Alloying of Aluminum. C. H. Ivin-son. Read before the British Found. Information concerning the making of these alloys, and especially alloys with some of the rarer metals. 2500 w. Mech Engr-June 27, 1913. No. 43636 A.

Aluminum Alloys Aluminum Alloys. C. E. Cox. Gives data collected concerning elements which will alloy with aluminum and their effects. Discussion. 3000 w. S A E Bul-Sept.,

1913. No. 46120 N.

Boiler Plate

How Boiler Plate Is Made. Charles. Bromley. Follows the material H. Bromley. through the mills from the stock pile to the finish. Ills. 1200 w. Power—Aug. 19, 1913. No. 44440.

Boronized Copper

Progress of Work on Boronized Copper. Dr. E. Weintraub. Read before the Am. Inst. of Metals. An account of the investigation with details of the process of boronizing copper. 2000 w. Chem Engr.—March, 1913. No. 40928 C.

Brass

Observations and Notes on the Season Cracking of Brass. Considers the various causes, deciding that the principal cause is imperfect die-work. Ills. 2000 w. Brass Wld—May, 1913. No. 42425. Nickel-Brass (Les laitons au nickel). Leon Guillet. A micrographic study of

these alloys; their mechanical properties, theoretical, practical and general conclusions. Ills. 4000 w. Rev de Metall—Sept., 1913. No. 45327 H.

See Brass Founding, under Machine Works and Foundries, and Etching and Electrometallurgy, under ELECT ENGINEERING, Electro Chemistry. ELECTRICAL also Alloys, under Materials of Construction.

Bronzes

Note on the Wear of Bronzes. A. Portevin and E. Nusbaumer. Describes researches undertaken to determine the influence of the chemical composition on the

wear of bronzes. 1800 w. Am Found Assn—Dec., 1912. No. 39517 N.

The Thermal Diagram, with Special Reference to the Bronzes. William Campbell. Shows that the "Thermal Diagram, with th gram" of the copper-tin alloys, though it appears complex is fairly simple when each section is examined by itself. 2500 w. Am Inst of Metals-Sept., 1912. No. 43287 N.

Calcium Carbide

The Manufacture of Calcium Carbide. From the Jour. of the Soc. of Chem., Ind. Describes details of manufacture, and some of the uses. 2500 w. Chem Engr-July, 1913. No. 43858 C.

Carborundum

Carborundum Refractories. Tone. Considers the physical properties of carborundum. 1500 w. Met & Chem Engng-Sept., 1913. No. 44965 C.

Cast Iron

Notes on Titanium and on the Cleansing Effect of Titanium on Cast Iron. Bradley Stoughton. Gives results of a research into the literature of titanium: and of a series of tests upon the effect of titanium on iron castings. 12000 w. Bul Am Inst of Min Engrs-Nov., 1912. No. 37548 F.

Corresion

Manufacture of Soft Steel Tubes in Relation to Corrosion. F. N. Speller. Considers theories of corrosion and the influence of manufacture. 2000 w. Chem

Engr—Jan., 1913. No. 39500 C. American Ingot Iron Versus Steel. G. F. Ahlbrandt. Shows the difference of manufacture, explaining the real cause of corrosion and why American ingot iron is superior to steel from a rust-resisting standpoint. Discussion. Ills. 6500 w. Jour Cleveland Engng Soc-Jan., 1918. No. 39396 D.

Fatigue

So-Called "Crystallization Through Fatigue." F. Rogers. Read before the Iron & Steel Inst. A criticism of this idea, claiming that fatigue will not cause crystallization. 2000 w. Ir & Coal Trds Rev—Sept. 5, 1913. No. 45188 A. "Crystallization of Steel Through Fatigue." F. Rogers. A criticism of this

generally accepted idea. Ills. 1500 w. Ir Age—Sept. 11, 1913. No. 45051 C.

Fire Bricks

Melting Points of Fire Bricks. C. W. Reports experiments conducted in an Arsem graphite resistance vacuum furnace, discussing results. Ills. 4500 w. U S Bureau of Stand, Tech. paper No. 10—June 15, 1912. No. 38656 N.

Forgings Comparative Merits of Mild Steel and Wrought Iron. J. Aitken. Suggestions which will aid in deciding which material is more suitable for certain uses. 900 w. Mech Wld—Jan. 17, 1913. No. 39471 A.

Galvanized Iron

Structure of Galvanized Iron. Arthur Walker and William H. Walker. Considers the structure of zinc protected iron under the heads of hot galvanized, standardized, and wet or electro-galvan-Sept., 1912. No. 39936 N.
Structure of Galvanized Iron. Walter
Arthur and William H. Walker. Consid-

German Silver

MATERIALS OF CONSTRUCTION

Metals

ers hot galvanized, sherardized, and wet or electrogalvanized iron. Ills. 1200 w. Am Inst of Metals — Sept., 1912. No. 43290 N.

Removing Zinc from Galvanized Iron Scrap. Describes a method of stripping recently patented by Joseph McFetridge, which allows both the iron or steel sheet and the zinc to be saved. 1000 w. Brass Wld—Aug., 1913. No. 44510.

Some Notes on the Life of Galvanized Pans (Einiges über die Lebensdauer von Verzinkungspfannen). C. Diegel. A critical study into English and German products comparing, composition and durability. Plates. 4000 w. Zeit des Ver deutscher Ing—July 19, 1913. No. 44652 D.

See also Wire, under Materials of Construction.

German Silver

The Microstructure of German Silver. O. F. Hudson. Read before the Inst. of Metals. Illustrates typical microstructures of cold-rolled and annealed samples, cast alloy and other specimens. 900 w. Engng—March 14, 1913. No. 40830 A.

Glass

A Machine for Blowing Window Glass. Illustrated description of the Sievert process which has been used successfully in European factories. 2500 w. Sci Am—July 19, 1913. No. 43778.

Gun-Metal

Practical Heat Treatment of Admiralty Gun-Metal. H. S. Primrose and J. S. G. Primrose. Read before the Inst. of metals. Illustrated report of research work to find a reliable method of improving gun-metals. 3500 w. Engng—April 18, 1913. No. 41771 A.

Iron—Where Does It All Go? D. C. Wilson. Calls attention to some of the uses to which iron is applied. 700 w. Am Found Assn—Oct., 1913. No. 46266 N.

Lead

Lead Bending and Lead Beating. William Hutton. First of a series of articles on methods of bending lead pipe and working sheet lead. Ills. 2500 w. Met Work—Dec. 20, 1912. Serial. 1st part. No. 38305.

Materials

The Storing and Handling of Material. Seven contributions from different writers which discuss various phases of this problem. Ills. 4000 w. Ry Age Gaz—Jan. 24, 1913. No. 39404.

Metallography

Analysis of Steel Sheets by the Microscope. C. Arthur White. Read before the Am. Ir. & St. Inst. Micrographs, and

discussion of some of the requisites of material and manufacturing operations for the production of commercial steel sheets. 2500 w. Met Work—Nov. 15, 1912. No. 37556.

Microscopical Analysis of Steel Sheets. C. Arthur White. Read before the Am. Ir. & St. Inst. Shows the value of microscopic and chemical analyses. Ills. 2000 w. Ir Age—Nov. 14, 1912. No. 37752 C.

High-Powered Microscopes (Microscope à Longue Portée). Felix Robin. Their application in the study of changes in alloys due to heat. Ills. 11000 w. Bull Soc d' Encour—Oct., 1912. No. 37495 E+F.

The Different Kinds of Occluded Slag in Steel; Their Probable Origin and Their Reduction (Ueber verschiedene Arten von Schlackeneinschlüssen im Stahl, ihre mutmassliche Herkunft und ihre Verminderung). Fr. Pacher. A metallographic study of various steels along such lines. Discussion. Ills. 5800 w. Stahl u Eisen—Oct. 3, 1912. No. 37400 D.

Use of the Microscope in the Study of Metals. Edwin F. Cone. Gives cases in which the microscope disclosed causes of steel failures. Ills. 1500 w. Ir Age—Oct. 16, 1913. No. 45913 C.

The Boiling of Metals. Joseph W. Richards. Reviews the vaporization of water, showing the analogy in the boiling or vaporization of metals. 2200 w. Am Inst of Metals—Oct., 1913. No. 46278 N.

Metals, Crystalline and Amorphous. Walter Rosenhain. Read before the British Assn. Describes results of experimental research to find evidence of the existence of an amorphous film. 4000 w. Engng—Oct. 10, 1913. Serial, 1st part. No. 46242 A.

The Work in Metals at the Bureau of Standards. Dr. G. K. Burgess. Outlines some of the work in metals that has been completed, and investigations under way. 4000 w. Am Inst of Metals—Oct., 1913. No. 46282 N.

Fine Texture in Pig and Malleable Iron (Kleingefüge des Roheisens und des schmiedbaren Eisens). Fr. Erbreich. A metallographic study of alloy percentages inducing close grains. Ills. Serial, 1st part. 2800 w. Giess Zeit—Sept. 15, 1918. No. 46022 D.

Metals

The Intercrystalline Cohesion of Metals. Walter Rosenhain and Donald Ewen. Read before the Inst. of Metals. An illustrated account of experimental work to obtain evidence supporting the amorphous-cement theory. 6500 w. Engng—Sept. 12, 1913. No. 45403 A.

Steel

Micrography

The Micro-Structure of Metals. H. B. Pulsifer. Illustrations and record of work at Armour Institute. 2500 w. Chem Engr—June, 1913. No. 48161 C. Photomicrographic Examination of Broken Crank Shaft. Report of the Ex-

amination made at the Naval Engineering Experiment Station, Annapolis, Md. Ills. 1500 w. Jour Am Soc of Nav Engrs—May, 1913. No. 42919 H.

Muntz Metal

Influence of Impurities on Muntz Metal. F. Johnson. Describes experi-ments made with a view to placing on record the exact cause of the brittleness, coarsely crystalline features, and general bad properties of Muntz metal when made from certain brands of copper, as distinct from the good properties when made from other brands of copper. Ills. 1000 w. Engng—Feb. 28, 1913. No. 40483 A.

Niello

The Manufacture of Niello (Frequently Called "Nielled" Silver). Describes this form of silver ornamentation. 1200 w. Brass Wld-Oct., 1913. No. 45996.

The Manufacture of Manila Rope. C. W. Hunt. Illustrated article giving information concerning rope manufacture and its use for hoisting, etc. 3500 w. Sci Am Sup—Dec. 28, 1912. No. 38638. Rubber

Artificial Rubber. Editorial review of work in this field, especially referring to a recent paper by Dr. F. Mollwo Perkin. 2000 w. Engng—Dec. 18, 1912. No. 2000 w. 38523 A.

Natural and Synthetic Rubber. Mollwo Perkin. Reviews the history of rubber from its first mention in 1536, and the various uses made of it in early times, the improvements and applications developed, etc., the methods of gathering, curing, vulcanizing, etc. Also discusses rubber substitutes, and synthetic rubber. 14500 w. Jour Soc of Arts—Dec. 31, 1912. No. 38383 A.

The Determination of Total Sulphur in India Rubber. C. E. Waters and J. B. Tuttle. Gives results of comparative tests of different variations of the method of Henriques. 3000 w. Bul Bureau of Stand—Nov. 1. 1912. No. 38661 N. Making Sheet Rubber. A picture story

told chronologically of making sheet-rubber used for inner tubes and tire casings. 2500 w. Automobile—July 3, 1913.

Serial, 1st part. No. 43400.

An Elasticity Recording Meter and Its Applications to the Study on Some Rubber and in the Determination of Their Respective Values (Élasticimètre enreg-

Applications à l'étude des istreur. caoutchoucs et à la détermination de leur valeur respective). C. Chéneveau and F. Heim. Description of meter and results of tests on vulcanized and crude rubber. Ills. 10000 w. Bull Soc d'Encour-July, 1913. No. 45314 E + F.

Scrap Metal
The Scrap Metal Business in the
United States. A general résumé of the scrap metal business for 1912 as given in Bul. No. 117 of the U. S. Geol. Survey. 2000 w. Brass Wld—July, 1913. No. 43742.

Scrap Steel
Novel Scrap Tool Steel Reclamation
Methods. J. J. Sheehan. Describes practice at several railroad shops and shows savings effected. 1800 w. Ir Trd Rev-Aug. 7, 1913. No. 44226.

Reclamation of Scrap Tool Steel. J. Sheehan. Read before the Ry. Tool Foremen's Assn. Describes the process by which the recovery was made. 1700 w. Ry Age Gaz (Mech Ed)—Aug., 1913. No. 44265 C.

Reclaiming Scrap on the Santa Fe. Illustrates and describes the plant at Corwith, Ill., for reclaiming scrap. Material valued at half a million dollars was reclaimed during the past year at these shops. 3000 w. Ry Age Gaz—Aug. 15, 1913. No. 44400.

Semi-Steel

Semi-Steel. M. Riddell. Read before the British Found. Assn. Considers the difficulties connected with the melting of steel in the cupola and the prevalence of hard spots and sponginess. Ills. w. Mech Engr—Aug. 8, 1913. 44454 A.

British Founder's Viewpoint of Semi-Steel. M. Riddell. Discussion of this process as practiced in English foundries, with suggestions for overcoming difficulties. 4000 w. Foundry—Sept., 1913. No. 44858.

Solder

Soldering Fluxes for Soft Solder. W. Arthur. Information concerning a number of fluxes and their qualities. Ills. 1000 w. Am Inst of Metals-Oct., 1913. No. 46276 N.

Steel

The Solid Non-Metallic Impurities in Steel. Henry D. Hibbard. Read before the Int. Cong. for Test. Mat. Discusses the causes of oxidation products in steel which are termed sonims and how they may be eliminated. 4500 w. Ir Trd Rev —Nov. 21, 1912. No. 37720. The Heat and Mechanical Treatment

of Steel (Sur le traitement thermique et mécanique des aciers). L. Grenet. Study

Wire

on the constitution of steel and the nature of its transformation at high temperatures. Ills. 5400 w. Tech Mod-Nov. 15, 1912. No. 37512 D.

The Selection of Steel in Mechanical Construction (La scelta degli acciai nelle costruzioni meccaniche). D. Fiorentini. A discussion on the relative qualities of various grades of steel and alloy-steels. Ills. Serial, 1st part. 3000 w. Monit Tec.—July 20, 1913. No. 45368 D.

Structural Steel

Structural Steel Fabrication at Rankin, Pa. Illustrates and describes the general features and equipment of the newer part of the plant, near Pittsburgh of the McClintic-Marshall Construction Co. 2500 w. Ir Age—Aug. 28, 1913. No. 44771 C.

Tests of Tar for Furnace Linings. R. Weissgerber. Considers methods of testing tars, and the most suitable qualities intended for use in steel works. 1500 w. Ir & Coal Trds Rev-May 16, 1913. No. 42550 A.

Tool Steel

The Hardening of Carbon and Low-Tungsten Tool Steels. Shipley N. Brayshaw. Third and concluding article of a serial, discussing tensile tests, and the interpretation of the results. Ills. 2000 w. Engineering Magazine—Dec., 1912. No. 37791 B.

Relation of Price of Tool Steel to Manufacturing Costs. D. G. Clark, Discusses the indirect relation of the cost of the tools to the cost of production. 1000 w. Mach, N Y—Nov.. 1912. No. 37166 C.

Tool Steel for the U.S. Navy. Lewis Hobart Kenney. Reports the study made of tool steels, giving tests of tungsten tool steel, and carbon tool steels, etc. Ills. 8700 w. Soc of Nav Archts & Marine Engrs, No. 13—Nov. 21, 1912. No. 37696 N.

Steels for Taps, Drills and Milling Cutters. Considers results of experiments made by the Winter Bros. Co., of Wrentham, Mass. 2000 w. Mach, N Y—Nov., 1912. No. 37162 C.

Tool Steel from a Salesman's Point of View. C. M. Bigger. From a paper read before the Metal Trds. Foremen's Club. Considers the adaptations of the various classes of definite lines of service, with suggestions for heat treatment. 3500 w. Ir Age—March 20, 1913. No. 40715 C.
The Progress of German Steel Works

in the Production of Highly Alloyed

Speed Steels (Die Fortschritte deutscher Stahlwerke bei der Herstellung hochle-gierter Schnellarbeitsstähle). G. Schles-inger. A critical study of the manufacture and durability of German made tool steel. Ills. 3000 w. Stahl u Eisen-June 5, 1913. No. 43504 D.

Modern Tool Steels and High-Speed Alloys. George S. Armstrong. Tool This first article of a series considers the elements of cutting speed and the factors affecting it and the development of tool steels and alloys. Ills. 2000 w. Engineering Magazine-Sept., 1913. No.

Modern Tool Steels and High-Speed Tool Alloys. George S. Armstrong. This second article of a serial deals with the processes of manufacture and mechanical treatment in American and British practice. Ills. 3000 w. Engineering Magazine—Oct., 1913. No. 45544 B.

Modern Tool Steels and High Speed Tool Alloys. George S. Armstrong. Discusses applications of carbon and alloy steel to specific uses in this third article of a series. Ills. 1000 w. Engineering Magazine—Nov., 1913. No. 46303 B.

See also Scrap Steel, under Materials of Construction, and Electrometallurgy. under MINING AND METALLURGY, Iron and Steel.

Tungsten

Applications of Ductile Tungsten. C. G. Fink. Beside its use in incandescent lamps, it is applied in electrical contacts, tungsten furnaces, tungsten gauze, and many other uses. 1200 w. Chem Engr— March, 1913. No. 40927 C.

Vanadium Steel

Vanadium Steel and Its Application in Locomotive Construction. George L. Norris. Information concerning the improvement in steel by combining vanadium, the classes and applications, giving records of service, and a general discussion. Ills. 7000 w. Pro W Ry Club-Sept. 16, 1913. No. 46285 C.

Experiments on Galvanized Wires (Untersuchungen an verzinkten Drähten). Hans Fleissner. Micrographic studies of the several galvanizing processes on wire, under varying conditions. Plates. Serial, 1st part. 4000 w. Oest Zeit f Berg u Hütten—July 12, 1913. No. 44622 D.

Wire and Wire Rods. Kenneth B. Lewis. Reviews the history of the production of wire and of wire rod rolling. Ills. 5000 w. Ir Trd Rev-Oct. 2, 1913. Serial, 1st part. No. 45626.

Calculator

MEASUREMENT

Dynamometers

Calculator

Power Plant Log Calculator. Walter N. Polakov. Gives the construction of the calculator with full directions for its use. 600 w. Power-April 29, 1913. No. 41680.

An Automatic Astronomical Calculator. Arthur H. Brown. Illustrated description of a new invention which renders unnecessary the long and tedious computations by nautical tables. 3500 w. Sci Am Sup-July 19, 1913. No. 43782.

The Forms of Jointed Calipers. Fred Horner. Illustrates and describes types. 1000 w. Mech Wld—July 4, 1913. Serial, 1st part. No. 43715 A.

Calibration

Calibration of Emery Testing Machine. A. H. Emery, Jr. Illustrated description of a huge calibrating machine built especially to calibrate the testing machine just erected at the Nat. Bureau of Standards, Washington. 1200 w. Am Mach—Jan. 9, 1913. No. 38941.

Calorimeter

Throttling Calorimeters. Illustrates and explains the principle, giving an example in which the calorimeter is used to determine the percentage of moisture in steam. 1500 w. Power—Sept. 23, 1913. No. 45277.

Device for Determining Central Points and Central Axes (Verfahren zur Bestimmung von Mittelpunkten und Mittelachsen). G. Rosenfeldt. An ingenious device used for determining rapidly and with accuracy the exact center of circles, flanges, pipes, etc. Ills. 2200 w. Zeit f Werkzeug—Dec. 15, 1912. No. 39029 D.

Use of Pitot Tube in Air Measurements. Frank L. Busey. Describes the operation and form of tube, explaining the theory and use. 1200 w. Power-

Feb. 4, 1913. No. 39662.

Colorimeter

A New Precision Colorimeter. P. G. Nutting. Describes a monochromatic analyzer designed to be a practical working instrument of wide range. Ills. 1000 w. Bul Bureau of Stand-March 15, 1913. No. 42931 N.

Colorimetry

Quantitative Spectrum Analysis. A. Shook. Discusses colorimeters and the law of light absorption. 3000 w. Met & Chem Engng—Sept., 1913. No. 44968 C.

Crankshaft Stresses

An Analysis of Crankshaft Stresses. K. W. Najder. Analytical determination of stresses in two- and three-bearing,

four-cylinder crankshafts. Ills. 1500 w. Mach, N. Y.—July, 1913. No. 43363 C.

Decimal System

An English Decimal System Weights and Measures. P. S. Bond. Suggests the adoption of a decimal system based upon the inch as a unit and in all other respects similar to the French system. 1600 w. Eng Rec—April 5, 1913. No. 41120.

Diagrams

Load-Extension Diagrams. Dalby. Read before the Royal Soc. Describes load-extension diagrams taken with the optical local-extension indica-tor. The apparatus is automatic in its action. 3500 w. Engng-July 18, 1913. No. 43969 A.

Load-Extension Diagrams Taken with the Optical Local-Extension Indicator. W. E. Dalby. Read before the Roy. Soc. The physical properties of gun-metal, brass, and phosphor-bronze are disclosed by diagrams and microphotographs. Ills. 3000 w. Mech Engr—Aug. 15, 1913. No. 44718 A.

Dimensions

Dimensional Arithmetic. Sydney H. Stelfox. Outlines a method, illustrating by example, and stating the advantages of the system. 1500 w. Engng-April 11, 1913. No. 41392 A.

Drafting

The Drafting Room and Its Opportunities for the Young Engineering Graduate. B. K. Read. Remarks on the advantages of the drafting room for young engineers, particularly the direct contact with the management. 1200 w.

Engr—April, 1913. No. 42332 C.
Free Hand Sketching in Mechanical
Work. Albert A. Dowd. Calls attention to the value of sketching as applied to mechanics, pointing out faults and suggesting improvements. Ills. 3000 Mach, N Y-May, 1913. No. 41786 C. 3000 w.

Drawing

Hints on Drawing and Tracing. Suggestions for securing exactness and accuracy are given. 1200 w. Mech Wld-July 18, 1913. Serial, 1st part. No. 43961 A.

Dynamometers

The Measurement of Dynamic Actions and Its Application in the Regular Examination of the Permanent Way of Railways. L. Schlussel. A description of the method. 8000 w. Bul Int Ry Cong—Dec., 1912. No. 38676 G. Garland's Magnetic Absorption Dyna-mometer. Ferdinand Jehle. Enumerates

the requirements of a dynamometer for testing automobile motors, and illustrates and describes the instrument named. 1000

Fatigue

MEASUREMENT

Horsepower

S A E Bul—Feb., 1913. No. 40396 N. The Electric Dynamometer in the Automobile Industry. Carl F. Scott. Explains the principles of the instrument and its advantages in testing all types of gasoline engines. Ills. 2500 w. Gen Elec Rev-May, 1913. No. 41810 C.

Engineering Units

Fixation of Units by Legislative Means (La fixation des unités par voie législative). R. de Baillchache. Suggestions for coherent terms in engineering nomenclature, and their establishment by law. 9000 w. Rev Gen des Sciences— Jan. 15, 1913. No. 40061 D.

The Elastic Hysteresis of Steel. Bertram Hopkinson and G. Trevor Williams. Read before the Royal Soc. An account of experiments made with the alternating stress machine with the object of measuring the energy dissipated by elastic hysteresis when steel undergoes cyclical variations of stress within the elas-2500 w. tic limit. Engng—Dec. 13, 1912. No. 38526 A.

Repeated Stress Testing. J. B. Kommers. Discusses preliminary experiments in a study of an alternating stress test which stressed the material beyond the elastic limit. Ills. 2000 w. Wis Engr—Nov., 1912. No. 38562 C.

A New Machine for Alternating Load Tests. Bernard P. Haigh. Read before the British Assn. Illustrated description of a machine designed for wire-testing and the method of standardizing the machine, by which the results are obtained accurately. 3800 w. Engng-Nov. 22, 1912. No. 38033 A.

Witton-Kramer Fatigue-Tester. Illustrated detailed description of an apparatus designed by Professor Kapp. Engng—Dec. 13, 1912. No. 1800 w 38520 A.

Note on Some Cases of "Fatigue" in the Steel Material of Steamers. S. J. P. Thearle. Read before the Inst. of Nav. Archts., at Glasgow. Gives results of investigations and the remedies. 1000 w. Engng—June 27, 1913. No. 43644 A.

Flue Gas Recorders
The Ward CO: Recorder. Illustrated description of the instrument and its method of operation. 1800 w. Engng—

March 7, 1913. No. 40710 A.

CO, Diagrams from Actual Practice. A. Gives a number of cases in Bement. which the results of analysis are connected with the performance of the fire. 1500 w. Power-March 25, 1913. 40796.

Friction

Notes on the Friction Between Wood and Iron, Especially Concerned with Brake Appliances for Power Measurement (Beiträge zur Kenntniss der Reibungsverhältnisse zwischen Holz Eisen, insbesondere bei Bremseinricht-ungen für Leistungsmessung). Heinrich Schmetje. Test apparatus and tests to determine conditions. Ills. Serial, 1st part. 2600 w. Turbine—Aug. 5, 1913. No. 44668 D.

Gages

External and Internal Thread Gages. L. L. Haas. Tables and data covering the construction. Ills. 1500 w. Am Mach-Feb. 27, 1913. No. 40141.

The Measurement of Large Internal George W. Burley. Diameters. Describes the rod gauge and its use. 1200 w. Prac Engr — Jan. 30, 1913. 39782 A.

Gas Measurement

Pitot Tubes for Gas Measurement. W. C. Rowse. An account of experiments to investigate the reliability of the pitot tube as a means of measuring gases, and to ascertain which forms give correct and which incorrect results. Ills. Jour Am Soc of Mech Engrs-Sept., 1913. No. 45416 D.

Hardness

Calculated Determination of Hardness by the Hertz Methods and Tests on the Practicability of the Results (Rechnerische Ermittlung der Härte nach Hertz and Versuche über die praktische Verwendbarkeit der Ergebnisse). Bruno Schwartz. A study of the Hertz formulae and compared results with testing ma-4200 w. Glaser's Annchines. Ills.

Sept. 1, 1913. No. 46012 D.

Heat Transmission
A Technical Process for Investigating the Heat Conducting Capacity of Plate-Shaped Material (Ein technisches Ver-fahren zur Ermittlung der Wärmeleitfähigkeit plattenförmiger Stoffe). Richard Poensgen. Laboratory results on stone, wood, cork, linoleum, asphalt, concrete, etc. Ills. 3500 w. Zeitschr des Ver deutscher Ing-Oct. 12, 1912. No. 37449 D. Horsepower

What Is a Horsepower? William Kent. A remonstrance against the Bureau of Standards' proposal to make the horse-power the exact equivalent of 746 watts. 2800 w. Power-Jan. Also editorial. 28, 1913. No. 39494.

The Measurement of Horsepower. W. Morgan and E. B. Wood. Discusses briefly the merits and demerits of types of absorption dynamometers and describes experimental investigations of the fan

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brake. Ills. 3000 w. Soc of Auto Engrs—June, 1913. No. 43300 N. See same heading, under Automobiles.

The Present Status of Hydrometry

The Present Status of Hydrometrie). Der heutige Stand der Hydrometrie). A. Budau. A review of present methods in the measurement of the flow of water. Ills. Serial, 1st part. 3000 w. Die Turbine—May 20, 1913. No. 43538 D.

A Power Counter for Indicators. Illustrated description of a Maihak indicator fitted with a Böttcher "power counting" 1300 w. Engr. Lond-Oct. 3, 1913. No. 45868 A.

An Energy Chart for Gas. T. B. Morley. Gives a graphical method of measuring the specific heat of gases. 2200 w. Engng—Oct. 3, 1913. No. 45857 A.

Inertia

Graphical Method of Determining Moments of Inertia. R. Kraus. Explains Mohr's method of graphical determination. 1200 w. Mach, N Y-May, 1913. No. 41790 C.

Kinematics

Velocity and Acceleration Diagrams. W. W. Padfield. Explains certain methods of dealing graphically with problems in kinematics, demonstrating their ap-plicability. 2200 w. Engng—Nov. 22, 1912. No. 38030 A.

Laboratories

The Krupp Steel Work Laboratories. Alfred Gradenwitz. Illustrated description of the laboratory equipment at Essen. 2000 w. Ir Age - Feb. 20, 1913. No. 39928 C.

The New Locomotive Laboratory at the University of Illinois. Edward C. Schmidt. Illustrated description of this testing plant and its work, discussing the new equipment. 6000 w. Pro W Ry Club—March 18, 1913. No. 41686 C.

Locomotive Laboratory, University of Illinois. Edward C. Schmidt. Explains the great benefits derived from locomotive testing plants, giving illustrations and description of details of the laboratory. 5500 w. Ry Mas Mech — April, 1913. No. 41569 C.

The Laboratories of the Modern Factory. E. F. Lake. Illustrates and describes the chemical, physical and metallographic apparatus and investigations of the Studebaker Corporation, Detroit, Mich. 3000 w. Ir Age—Aug. 21, 1913. No. 44488 C.

The Russell Sage Laboratory. Illustrated detailed description of this new building and its equipment. 3500 w. Ir Trd Rev-July 31, 1913. No. 44100.

Loads

Graphical Determination of Bearing Loads. Fritz Huber. Gives application of this method to the determination of the loads on all of the transmission bearings of a double chain driven car. 7000 Horseless Age-Oct. 15, 1913. No. 45995.

Lubricants

Oil Testing. Illustrated description of a machine for recording the behavior of lubricants under working conditions, with particular regard to the absorption of power. 2000 w. Autocar—Sept. 6, 1913. No. 45138 A.

Hislop's Oil-Testing Machine. Illustrates and describes a machine devised for testing the lubricating qualities of oils and greases. 1200 w. Engng—Aug. 22, 1913. No. 44919 A.

Magnetic Testing

Magnetic Measurement in Iron and Steel Work. Illustrates and describes some of the instruments used. 2000 w. Elect'n, Lond-Dec. 27, 1912. No. 38911 A. Manometers

A New Manometer. Illustrated description of the Spurge manometer, and explanation of its use for the measurement of pressure. 1800 w. Engr, Lond

-May 16, 1913. No. 42546 A.

Experiments with a Tilting Manometer for Measurement of Small Pressure Differences. J. R. Pannell. Notes on the behavior of the pressure-gauge described, and some improvements intro-duced. Ills. 1600 w. Engng—Sept. 12, 1913. No. 45400 A.

Metal Tests

Breakdown Tests of Metals. O. Boudouard. Read before the Int. Assn. for Test Mat. Illustrates and describes the apparatus and method of testing, discussing results. 3500 w. Mech Engr—Jan. 24, 1913. No. 39787 A.

Strength and Durability of Iron, Steel, and Bronzes at High Temperatures. Gives results of two series of tests in tensions and in torsion made under high temperature conditions by L. W. Spring and I. M. Bregowsky in Chicago. 800 w. Eng News—Feb. 20, 1913. No. 39978.

Metallographic Testing. Considers the scope of the science of metallography, thermal analysis, microscopic analysis. chemical and mechanical testing as carried out at the Bureau of Standards. 16 pp. US Bureau of Stand—Circ 42. No. 45412 N.

Hydraulic Machine for Testing Metals (Machine hydraulique à essayer les métaux). M. Genes. General descripmétaux). tion of the "Schiller" machine. Ills. 1000 Rev de Metall-Sept., 1913. No.

Meters

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Pyrometry

The Effect of Drill-Holes on the Resistance of Soft Steel (Influence du percage sur la résistance des aciers doux). C. Birault. Results of tests tending to show the weakening effect of rivet holes. Ills. 2200 w. Genie Civil—July 19, 1913. No. 45341 D.

Meters

See also Repair Shop, under Machine Works and Foundries.

Metric System

Simple Approximate Metric Conversions. Albert A. Carey. Gives simple rules for quickly converting metric measurements to those of the English system with approximate accuracy. 2200 w. Power—Feb. 18, 1913. No. 39894.

Oil Tests

The Evaporation Test for Mineral Lubricating and Transformer Oils. C. E. Waters. Describes work to determine the differences in the amounts of evaporation when a given weight of oil was heated with a greater or less surface area exposed. 13 pp. Tech Paper, Bureau of Stand—No. 13. No. 42927 N.

Orifices

The Efflux of Steam from Guide Blades and Nozzles. Dr. August Loschge. Abstract, with emendations by the author, of a paper published in the Zeit. Ver. Deut Eng. Report of experimental research. Ills. 3000 w. Engng—Oct. 17, 1913. No. 46248 A.

Permeameter

A New Universal Permeameter (Sur un nouveau perméamètre universel). A. Iliovici. A new instrument for measuring the permeability of test pieces of steel, sheet iron and iron wire. Ills. 2800 w. Bul Soc Int d Electriciens— June, 1913. No. 43568 F.

Pipe Friction

Determination of the Frictional Resistance of Gases in Pipes and Conduits (Die Bestimmung des Reibungswiderstandes von Gasen in Rohrleitungen und Strecken). Herr Kegel. The derivation of new formulæ and curves for air and gases. 2400 w. Glückauf—Sept. 13, 1913. No. 45388 D.

Pitot Tubes

The Pitot Tube Applied to the Measurement of Air. Leo Loeb. A rather complete survey of the use of the pitot tube in the measurement of air. Ills. 8000 w. Jour Am Soc of Nav Engrs—Nov., 1912. No. 38291 H.

Notes on the Pitot Tube. John Airey. Gives results of experiments, with a rummary of the writer's views. 1500 w. Eng News—April 17, 1913. No. 41334.

Pitot Tube in Gas Measurement. C. E. McQuigg. A problem is worked out and

curves given for abbreviation of calculations. 1200 w. Eng & Min Jour—March 29, 1913. No. 40953.

See also Cinemometry, under Measurement.

Pressure Gauges

New Meters for the Pressure and Velocity of Gases and Steam (Neue Messgeräte für Druck- und Geschwindigkeit von Gasen und Dämpfen). H. Lütke. Describes new vacuum and differential meters. Ills. 1700 w. Stahl u Eisen—Aug. 7, 1913. No. 44613 D.

Pressures

The Designation of Specific Fluid Pressures (Ueber die Benennung der spezifischen Flussigkeitsdrucke). Criticisms on the rules for testing fans and compressors as adopted by the Vereins Deutscher Ingenieure. 6000 w. Die Turbine—May 20, 1913. No. 43537 D.

Prony Brake

The Prony Brake and Its Use. H. M. Phillips. Explanation of the prony brake, the common errors in its application and directions for using it correctly. 2500 w. Power—May 13, 1913. No. 42018.

Pyrometry

Pyrometry in Steel Works. Charles R. Darling. A general account of methods for the measurement of high temperature, which include thermo-couples, thermal radiation pyrometers, electrical resistance methods, optical pyrometers and calorimetric pyrometers. 6000 w. Elect'n, Lond—Dec. 13, 1912. (Special.) No. 38853 D.

Note on the Calibration of Optical Pyrometers. Paul D. Foote. Describes a method of calibrating pyrometers by means of melts of certain metals. 1000 w. Met & Chem Engng—Feb., 1913. No. 39689 C.

The Practical Operation of Electrical Temperature Recorders (Der Praktische Betrieb elektrischer Temperaturmessanlagen). Bruno Thieme. Brief outline of the principles of the three types of electrical recorders. 2800 w. Feuerungs—Feb. 15, 1913. No. 40561 D.

Electric Temperature Recorders for Foundry Work (Elektrische Temperaturmessapparate für Giessereibetriebe). R. Schwenn. The principles of electric pyrometry, construction of instruments, and leading types. Ills. Serial. 1st part. 2500 w. Giess Zeit—March 1, 1913. No. 40520 D.

Pyrometry (La Pyrométrie). M. Gerard. The principles of pyrometry by thermo-electric couples and by radiation; their control and operation, trade uses and ordinary temperatures encountered

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Synchroscope

in the principal industries. 4200.

Indus—June 28, 1913. No. 43586 D.

Modern Methods of Measuring Temperature. Robert S. Whipple. Considers methods now available for the measurement of temperature. Ills. 11000 w. Inst of Mech Engrs-July 29, 1913. No. 44318 N.

Rotation

A Simple Statement of the Principles of Acceleration Governing the Movement of Rotating Masses (Eine einfache Darstellung der Beschleunigungsverhältnisse sei der Bewegung auf rotierenden Kör-pern). Erwin Lihotzky. Mathematical study. Diagrams. 3600 w. Die Turbine -Feb. 20, 1913. No. 40559 D.

Sieves

Specifications for and Measurement of Standard Sieves. Gives new sieve specifications adopted Feb. 13, 1912, and methods of measurement and instructions for tests. 6000 w. Bureau of Stand, Circ 39—Dec. 16, 1912. No. 39287 N.

Speeds

Tables of Circumferential Speeds. W. L. Tryon. Gives tables that can be used for gear and belt speeds and also for obtaining the speed of revolving parts of high-speed motors. 1000 w. Am Mach —Dec. 19, 1912. No. 38266.

Standard Samples

Standard Analyzed Samples. Information concerning such samples, their use, preparation, and related matters. 16 pp. U S Bureau of Stand—Circ 25. No. 45411 N.

Steam Meters

Steam Meters. J. A. Knesche. cusses their prices and operating characteristics. Ills. 3000 w. Engineering Magazine—Dec., 1912. No. 37795 B.

Steam Meters. J. A. Knesche. A study of the mechanical construction and operating characteristics of the leading types. Ills. 4600 w. Engineering Magazine— Jan., 1913. No. 38684 B.

The Circular Diagram of Stress and Its Application to the Theory of Internal Friction. O. H. Basquin. An explanation of this method devised by Prof. Otto Mohr, illustrating its use by problems. Discussion. 8000 w. Jour W Soc of Engrs-Nov., 1912. No. 38559 D.

Flat Surfaces Supported by Stay Bolts. A. J. Toppin. Gives tables and curves showing safe working pressures. 200 w. Power—Dec. 24, 1912. No. 38358.

Stresses and Deflections of Shafts. Schein. Gives application of a graphical method based on the theory of Mohr. 2500 w. Am Mach—Dec. 19, 1912. No. **3**8269.

Stress and Deflection of Shafts. Schein. Discusses shafts with three supports. Diagrams. 1800 w. Am Mach— Jan. 2, 1913. No. 38732.

Recent Researches Made at the National Physical Laboratory, Teddington, England, on the Resistance of Metals to Alternating Stresses. T. E. Stanton. An account of investigations of stresses alternating in a continuous cycle, and alternating between definite lls. 1500 w. Am Found Assn limits. Ills. 1500 w. —Dec., 1912. No. 39524 N.

Repeated-Stress Testing. J. B. Komers. Read before the Int. Assn. for Test. Mat. Describes method of making such tests and gives results of tests on various materials. 2500 w. Wis Engr—Dec., 1912. No. 39310 C.

Increase of Bore of High-Speed Wheels by Centrifugal Stresses, with Formulæ for Force and Shrink Fits. Sanford A. Moss' paper is discussed briefly. 1200 w. Jour Am Soc of Mech Engrs—April, 1913. No. 41298 D.

Lecture on "Color Photography of Internal Stress in Bodies of Engineering Form." Ernest G. Coker. On the application of polarized light to the study of stress distribution in certain kinds of material under load. Discussion. Ills. 8000 w. Jour W of Scotland Ir & St Inst—Dec., 1912, Jan.-Feb., 1913. No. 41700 N.

The Distribution of Stress Due to a Rivet in a Plate. E. G. Coker and W. A. Scoble. Read before the Inst. of Nav. Archts. Describes a general method for determining both the sum and the difference of the princial stresses at a point in a plate. 3500 w. Engng — March 28, 1913. No. 41144 A.

Stresses in Stayed Cylindrical Shells. C. E. Stromeyer. Read before the Inst. of Naval Archts. Shows a method of estimating these stresses. 1500 w. M. Engr-March 21, 1913. No. 41007 A. Mech

Stresses in Stayed Cylindrical Shells. C. E. Stromeyer. Read before the Inst. of Nav. Archts. Explains method of esti-mating the stresses. 1200 w. Engr, Lond —April 18, 1913. No. 41779 A.

See also Fatigue, under Measurement.

Stroboscope

The Stroboscope in Speed Measure-ments and Other Engineering Tests. David Robertson. Read before the Inst. of Engrs. & Shipbldrs. in Scotland. Describes stroboscopic methods. Ills. 9000 w. Mech Engr—May 9 & 16, 1913. Serial. 2 parts. No. 42282 each A.

Synchroscope

The Synchroscope. John A. Randolph. Explains its principles, its use, and ad-

Tachometry

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Tests

vantages. 1800 w. Power—Nov. 19. 1912. No. 37617.

Tachometry

Experimental Determination of the Coefficient of Variation in Speed (Die experimentelle Bestimmung des Ungleich-förmigkeitsgrades). Wilhelm Riehm. förmigkeitsgrades). Describes an electric tachograph for recording speeds and the study of the charts so made. Ills. 4000 w. Zeit des Ver deutscher Ing—July 12, 1913. No. 44649 D.

Temperatures
Temperature Conversion Tables. Leonard Waldo. Gives Centigrade and Fahrenheit temperature compression tables, and explains the rules for conversion. Also gives scale. 1800 w. Bul Am Inst of Min Engrs—April, 1913. No. 41657 F.

l'est Bars

A Suggested System of Test Bars for Chillable Irons. Thomas D. West. De-scribes an original system for making comparative tests of the relative con-traction, deflection and strength of chillable cast iron in both of its distinct forms. 1800 w. Am Found Assn—Dec., 1912. No. 39523 N.

Investigation on the Influence of the Shape of Test Bars on the Mechanical Properties of Cast Iron. J. E. Stead. Report of experimental investigations. 1500 w. Am Found Assn—Dec., 1912. No. 39515 N.

On the Influence of the Shape of the Bar and of the Treatment of the Metal Upon the Results of Notched Bar Im-A. Schmid. Describes experiments and states results. 1500 w. Am Found Assn—Dec., 1912. No. 39512 N.

Testing Machines A Universal Testing-Machine (Universal-Prüfmaschine). Max Kurrein. Description of the "Immerfertig" machine, built by the Dusseldorfer Maschinenbau-A.-G. Ills. 1500 w. Zeitschr des Ver deutscher Ing-Nov. 30, 1912. No.

Recent Testing Machines for Molded Materials (Neuere Prüfmaschinen für gegossene Körper). Hubert Hermanns. Descriptions of the several machines in use in large German foundry laboratories. Ills. Serial. 1st part. 2400 w. Zeit—Apr. 15, 1913. No. 42124 D.

English and American Apparatus for Material Testing (Einrichtung englischer und amerikanischer Materialprüfungsanstalten). Viktor Luftschitz. Brief descriptions of mechanical devices in lab-oratory use. Ills. Serial. 1st part. 2500 w. Zeit d Oest Ing u Arch Ver—Apr. 25, 1913. No. 42149 D.

Largest Precision Testing Machine. A. H. Emery, Jr. Illustrated description of the Emery machine recently erected at the National Bureau of Standards, Wash-ington, D. C. 4500 w. Am Mach—Jan. 2, 1913. No. 38731.

The 1,000-Ton Testing Machine, Emery Construction, of the Bureau of Standards in Washington (Die 1000 t-Materialprüfmaschine, Bauart Emery, des Bureau of Standards in Washington). M. Kurrein. Details of this new hydraulic machine for tension and compression tests. Ills. 5000 w. Zeit des Ver deutscher Ing-July 19, 1913. 44651 D.

The Upton-Lewis Fatigue Testing Machine in Sibley College. G. B. Upton. Illustrated description of a new type of fatigue testing machine. 2200 w. Jour of Engng-Oct., 1913. 46294 C

Testing Materials

Practical Testing of Materials. Aims to give precise instructions for the preparation of specimens from rough material; the particular uses of testing machines; and the charting of data and details of testing. 1800 w. Mech Wld —Nov. 15, 1912. Serial. 1st part. No. 37820 A.

The Sixth Congress of the International Association for Testing Materials (VIe Congrès de l'Association Interna-tionale pour l'Essai des Matériaux). M. Mesnager. Reviews the work of the Congress, convened in New York, September, 1912, and presents abstracts of some papers read. Serial. 1st part. Ills. 3000 w. Génie Civil-Nov. 9, 1912. No. 37523 D.

Test Methods

Present Methods of Testing. Prof. H. Hubert. Read before the Iron & Steel Inst. Considered with special reference to the work of the International Testing Association. 5000 w. Ir & Coal Trds Rev—Sept. 5, 1913. No. 45189 A.

Test Pieces

A New Tensile Test Piece and Molder. K. W. Zimmerschied. Explains the advantages of the form illustrated. 700 w. S A E Bul—May, 1913. No. 42470 N.

Tests

Notes on the Brittleness Test. Observations made while using the brittleness test as a standard method for steels and forgings. 1500 w. Am Found Assn-Dec., 1912. No. 39521 N.

Break-Down Tests of Metals. O. Boudouard. A study of vibration, describing the testing apparatus and stating results. Ills. 3000 w. Am Found Assn—Dec., Ills. 1912. No. 39514 N.

Thermometers

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Venturi Meter

Application of the Methods of Mechanical Testing Adopted for Other Metals to Foundry Pig Testing. A. Damour. Proposals for fixing a "specimen of international type." 1500 w. Am Found Assn—Dec., 1912. No. 39516 N.

Thermometers

The Correction for Emergent Stem of the Mercurial Thermometer. Edgar Buckingham. Detailed discussion of the subject, with the conclusion that the auxiliary stem method is the best we have for work of high accuracy, as well as the most convenient. 9000 w. Bul Bureau of Stand—June 15, 1912. No. 38657 N.

The Sensitiveness of the Thermometer (Die Empfindlichkeit der Thermometer). Herr de Grahl. The derivation of formulae for determining the coefficient of sensitiveness. Diagrams. 3000 w. Feuerungstechnik — Jan. 15, 1913. No. 40024 D.

New Calorimetric Resistance Thermometers. H. C. Dickinson and E. F. Mueller. Illustrated general description of the latest form of these instruments. 2500 w. Bureau of Stand—No. 200. No. 44735 N.

See also Pyrometry, under Measurement.

Thermometry

Thermometric Lag. D. R. Harper, 3d. Methods of determining lag are discussed and experiments given to test the theories as applied to different thermometers. 12,500 w. Bul Bureau of Stand—March 1, 1913. No. 42929 N.

A Chart for Use in Connection with Wet and Dry Bulb Thermometers in Making Psychrometric Determinations. Clarence P. Linville. Gives the chart prepared by Willis H. Carrier, explaining its value and use. 900 w. Bul Am Inst of Min Engrs—Oct., 1913. No. 46354 F.

Time Keeping

Time Keeping by Machinery. Illustrated description of the system in use by the marine department of the Maryland Steel Co. 1500 w. Ir Trd Rev—Dec. 12, 1912. No. 38160.

Torsion

A New Relation in Torsion Loading. G. B. Upton. Explains a graphical relationship discovered between the torsion test of ductile metals and the direct spear test. 1200 w. Sib Jour of Engng—June. 1913. No. 43185 C.

spear test. 1200 w. Sib Jour of Engng

June, 1913. No. 43185 C.

Test of a Gary-Cummings Torsion

Meter for the U. S. S. Duncan at the
Works of the Fore River Shipbuilding

Company. Warren G. Child. Describes

the calibration test for the port shaft of

the U. S. S. Duncan. Ills. 700 w. Jour

Am Soc of Nav Engrs—May, 1913. No. 42920 H

Torsion Indicators (Ueber Torsionsin-dikatoren). Dr. Nettmann. A study, covering the theory and practice of methods and devices for measuring the torsion of rotating shafts. Ills. Serial, 1st part. 3000 w. Die Turbine—June 20, 1913. No. 43539 D.

Torsionmeter

A Torsionmeter with Visible Scale. Dr. K. Suyehiro. Abstract of a paper read before the Japanese Soc. of Naval Archts. Diagrams and description. 900 w. Engng —Oct. 3, 1913. No. 45860 A.

Toughness

The Property of Toughness in Metals. Albert F. Shore. Brief paper read befor the Am Soc for Test Mat. Explains methods of determining toughness and the relation of bend and tension test readings. Ills. 900 w. Ir Age—July 3, 1913. No. 43450 C.

Trigonometry

The Use of Trigonometry in the Shop. Thomas R. Shaw. Shows how the solution of most triangles can be obtained and gives formulae. 1500 w. Mech Engr.—Aug. 15, 1913. No. 44719 A.

Tube Stresses

Stress Analysis of Circular Tubes. Björgulf Haukelid. Analytical and graphical determination of stresses in tunnel sections under various conditions of loading. 2000 w. Eng Rec—June 14, 1913. No. 42830.

The Distribution of Deformation in Metals Subject to Pressure (Distribution des déformations dans les métaux soumis à des efforts). Ch. Frémont. A study of the folding effect produced on weighted tubes. Ills. 3000 w. Tech Mod—June 1, 1913. No. 43069 D.

The Distribution of Deformation in

The Distribution of Deformation in Metals Subjected to Pressure (Distribution des déformations dans les métaux soumis à des efforts). L. Hartmann. A discussion from views previously expressed by Ch. Frémont on folding effect in flexible metal tubes. Ills. 3300 w. Tech Mod—Aug. 1, 1913. No. 45335 D.

Units of Force

Recommendations Concerning the Units of Force. Edward V. Huntington. Discusses perplexities arising in connection with force, mass, and weight, and gives recommendations. 3500 w. Bul Soc for Pro of Engng Ed—June, 1913. No. 44828 N.

Venturi Meter

The Venturi Steam Meter. Charles G. Richardson. Illustrated explanation of the construction and operation of the venturi meter when used for measuring the

Belts

flow of steam through a steam pipe. 2000 w. Power-Oct. 7, 1913. No. 45698.

A New Viscometer. The Rhodin viscometer is illustrated and described, and explanation of the principle of measurement. 2200 w. Engr, Lond—June 13, 1913. No. 43151 A.

Weighing Machines

A New Automatic Weighing Machine. Illustrated description of the machine known as the Kron scale, the invention of William Simonsson. 1000 w. Engr, Lond -Jan. 10, 1913. No. 39273 A.

The Schenck Automatic Weighing Machine with Auxiliary Sliding Weight (Die selbststättige Brückenwage mit Hilfslaufgewicht, Bauart Schenck). E. Blau. Especially adapted as a track scale for weighing mine cars. Ills. 2000 w. Oest Zeit f B u H — Jan. 18, 1913. 40018 D.

See also Track Scales, under RAILWAY ENGINEERING. Permanent Way Buildings.

Weights

The New International Diamond Carat of 200 Milligrams. George Frederick Kunz. Necessity for a uniform standard and the final adoption of this unit, with basis for determining values from old units. 10400 w. Bul Am Inst Min Engrs —July, 1913. No. 44014 F.

POWER AND TRANSMISSION

Air Compressors

Air Compressors. George Barr. Read before the Manchester Assn. of Engrs. Discusses why compressed air is considered an inefficient means of power transmission and what has been done to better conditions. 2000 w. Mech Wld-Nov. 15, 1912. Serial. 1st part. No. 37818 A.

Measuring Air from Compressor. E. A. Fessenden. Gives a simple and accurate method of measuring air discharge from a compressor. 1200 w. Power— Dec. 31, 1912. No. 38702.

Electric Driven Air Compressors as Exemplified by Plants for Underground Work in New York City. Frank Richards. An account of the electrically driven air compressor plants for Lexington Ave. subway work, and other important underground work in New York City. Ills. 1500 w. Engng & Con-Jan. 22, 1913. No. 39327.

Rules for Test Methods on Compressors (Regeln für die Leistungsversuche an Kompressoren). Specifications adopted by the German Engineering Society. Ills. 1st part. 2500 w. Kälte-Ind---Serial.

Dec., 1912. No. 39014 D.

Compressor for Charging Compressed-Air Mining Locomotives. Illustrated description of compressor plant and compressed-air locomotives, built in Berlin, for hauling in mines. 1200 w. Engng—Feb. 7, 1913. No. 39916 A.

The Air Compressor and the Electric Drive. Frank Richards. Illustrated description of the use of the electric driven compressor on the N. Y. subways. 1800 w. Compressed Air-March, 1913. No. 40431.

A Large English Air Compressor. Illustrates and describes a large capacity machine employing a new type of

valve. 800 w. Coal Age-Aug. 16, 1913. No. 44438.

Air Pump

Present Status of the Leblanc Air Pump. H. T. Herr. Illustrated description of the Leblanc system, its characteristics under favorable conditions, its application, etc. Ills. 2500 w. Jour Am Soc of Nav Engrs—Nov., 1912. No. 38297 H.

Bearings

Main Points in the Selection of Stuffing-Box Packing (Hauptgesichtpunkte in der Wahl von Stopfbüchs-Packungen). H. Hirschlaff. Commercial types and the duties to be expected from them. Ills. 4000 w. 44673 D. Kälte Ind-July. 1913.

Belts

The Practicability of Steel Belting. R. K. Cronkhite. Gives results of tests under a variety of conditions. Ills. w. Am Mach-Nov. 21, 1912. No. 37665.

Heavy Belt Transmission for Rolling Mills (Ueber schwere Riemenantriebe für-Walzwerksanlagen). W. Schömburg. study of belt arrangements and sizes for this class of duties. Ills. 2400 w. Stahl u Eisen—Oct. 3, 1912. No. 37401 D.

Belting: Transmission of Power. Summary of a report to the Birmingham Assn. of Mech. Engrs. Considers material, care, size, etc., giving the merits and demerits of each method. 1700 w. Prac Engr—Dec. 5, 1912. Serial. 1st part. No. 38237 A.

Studies on Belt-Shifting Devices (Studio sui montacinghia installati). G. Capello. Describing various systems of belt-shifters and discussing their rela-tive merits. Ills. Serial. 1st part. 2400 w. Industria—Nov. 17, 1912. No.

38495 D.

The Theory of Belt Driving (Zur Theorie der Riementriebe). W. Maier. A consideration of the centrifugal elements derived from the belt motion. Diagrams. 4000 w. Zeitschr des Ver deutscher Ing

—Dec. 21, 1912. No. 39039 D.

The Pulling Power of Slack Belts.

Robert Thurston Kent. Describes investigations and reports results. 3000 w. Ind Engng—May, 1913. No. 41953 C.
The Protection of Main Belt Drives

with Fire Retardant Partitions, with Observations on the Safeguarding of Ver-tical Openings Through Floors and the Relation of Such Protection to the Safety of Operations Employed in Manufacturing Establishments. C. H. Smith. Ills. 1500 w. Jour Am Soc of Mech Engrs-May, 1913. No. 42406 D.

Stretching and Axle Loads on Belt and Rope Drives (Vorspannung und Achsdruck bei Riemen- und Seiltrieben). Georg Duffing. A study of formulae on the sag of belts and ropes. Diagrams. 8000 w. Zeit des Ver deutscher Ing-June 21, 1913. No. 43532 D.

How Flexible Steel Belting is Manufactured. Illustrates and describes the special machines employed, the forming and assembling operations, tests of the belt and its application. 1500 w. Ir Trd Rev—Aug. 21, 1913. No. 44528. Blower Designs

The Centrifugal Blower for High Pressures. Henry F. Schmidt's paper is discussed. Ills. 14500 w. Jour Am Soc Mech Engrs—July, 1913. 44026 D.

Blowers

Blowers for Steel Works (Les machines soufflantes pour acières). H. Noble. A study of the operation of piston, steam, electric and turbo-blowers in steel manufacture. Ills. 5400 w. Tech Mod-April 15, 1913. No. 42174 D.

the Centrifugal Memorandum on Blower for Foundry Use. Dr. Richard Moldenke. Reviews an efficiency test made in Germany. Ills. 1000 w. Am Found Assn—Oct., 1913. No. 46270 N.

Central Plants

New York City's Power Problems. A. Illustrated discussion of a test now being conducted on the plant at the Hall of Records, extending over a year. 1500 w. Power-Aug. 26, 1913. No. 44583.

Chain Driving

Chain Driving. H. T. Hildage. stract of a paper read before the Rugby Engng Soc. States the advantages of chain gearing, and discusses characteristics of various types. Ills. 5000 w. Mech Engr-Nov. 29, 1912. No. 38123 A.

Transmission by Toothed Chains (Catene a denti per trasmissione). Giacomo. Advocating the use of toothed pulleys and toothed flexible chains, and giving points in the design of such chains. Ills. 4200 w. Monit Tec — March 10, 1913. No. 40619 D.

Clutches

Characteristics of Friction Clutches. J. W. Brassington. Calls attention to the importance of the friction clutch and the lack of technical information covering the design. 1200 w. Mach, N Y—Aug., 1913. No. 44079 C.

Compressed Air

Measuring the Flow of Air in Pipes. G. G. Crewson. Illustrates and describes the apparatus used—a form of pitot tube. 700 w. Compressed Air-Dec., 1912. No. 38571.

The Resistance to the Flow of Air Through Pipes. A. H. Gibson. Gives a formula developed, with tabulated par-

ticulars of experiments examined. 500 w. Engng—Nov. 22, 1912. No. 38031 A. A Graphic Solution of D'Arcy's For-mula for the Transmission of Compressed Air in Pipes. Nathaniel Herz. Gives a graphic chart, explaining its use. 700 w. Bul Am Inst of Min Engrs-

Dec., 1912. No. 38373 F.

Compressed Air—A Foundry Necessity. Arthur F. Murray. Outlines the uses to which compressed air is applied in the foundry, and briefly considers compressors, piping, and installation. w. Am Found Assn—Dec., 1912. No. 38610 N.

The Generation and Use of Compressed Air for Mining. George Blake Walker. Abstract of a paper read before the Midland Inst. of Min., Civ., & Mech. Engrs. Illustrates and describes devices used in air compression, typical machines of English builders, the utilization of compressed air, etc. 4200 w. Col Guard-Jan. 31, 1913. No. 39793 A.

Generation and Use of Compressed Air. George Blake Walker. Abstract of a paper read before the Midland Inst. of Min., Civ., & Mech. Engrs. Discusses types of compressors, the arrangement of the working parts, and related subjects. Ills. 2000 w. Quarry—March, 1913. Serial, 1st part. No. 40470 A.

Applications of Compressed Air in the Foundry (Einiges über die Verwendung der Pressluft in der Giesserei). Hubert Hermanns. Hand-ramming machines for molding work, rivetters, chipping tools, etc. Ills. Serial, 1st part. 2800 w. Giess Zeit—Feb. 15, 1913. No. 40519 D. Compressed Air for Working Auxil-

iaries in Ships Propelled by Internal-Com-

POWER AND TRANSMISSION

Electric Drive

bustion Engines. W. Reavell. Read before the Inst. of Naval Archts. Shows the advantages of compressed air for this purpose and discusses the conditions under which it can be most efficiently used. 4000 w. Mech Engr—March 21, No. 41009 A. 1913.

The Measurement of Compressed Air Delivered by the Hydraulic Compressor, Cobalt. C. H. Taylor. Illustrates and describes types of testing apparatus, discussing tests made, and improvements introduced. 3000 w. Qr Bul of Can Min Inst-March, 1913. No. 41603 N.

Historical Development of Compressed Air Plants (Zur Entwicklungsgeschichte der Druckluftanlagen). A. Riedler. A review of the men and companies prominent in the development of compressed air power machinery. 5000 w. Zeit des Oest Ing u Arch Ver—March 7, 1913. No. 41472 D.

Entropy-Temperature and Transmission Diagrams for Air. C. R. Richards. Presents the theory and use of three graphical charts, by the aid of which all problems pertaining to the compression, expansion and transmission of compressed air may be solved. 20 pp. Bul Univ of Ill, No. 63—Jan. 6, 1913. No. 42479 N.

Time Studies and Air Consumption. Andre Formis. Presents studies of drilling operations and of pump performance. Ills. 1200 w. Eng & Min Jour—June 14, 1913. No. 42832.

Intercooling in Air Compression. R. S. Howard. A method of correcting compressor test data for comparison with guarantees. 2000 w. Ind Engng—June, 1913. No. 42696 C.

Some Novel Uses of Compressed Air. Illustrated account of how compressed air is used for sheep shearing, cutting sugar cane, shifting automobile gears, and other uses. 2500 w. Sci Am-July 5, 1913. No. 43427.

Air Compressors and Compressed Air Machinery. Robert L. Streeter. First of a series of illustrated articles. Discusses the economy of compression and uses for air tools. 4000 w. Engineering Magazine—Sept., 1913. No. 44765 B.

Air Compressors and Compressed-Air Machinery. Robert L. Streeter. second article of a series considers small compressors, their classification and characteristics. Ills. 4000 w. Engineering Magazine—Oct., 1913. No. 45540 B.

Air Compressors and Compressed Air Robert L. Streeter. Machinery. third article of a series deals with large steam-driven compressors. Ills. 3500 w. Engineering Magazine—Nov., 1913. No. 46302 B.

Leakage in Compressed Air Lines. William D. Ennis. Discusses practical methods of testing leakage in shop lines. 1800 w. Prac Engr, Chicago—Sept. 15, 1913. No. 45134.

Compressed Air in the Cotton Industry. C. C. Phelps. Explains its important part in the various stages of manufacture. Ills. 7000 w. Compressed Air—Oct., Ills. 7000 w. 1913. No. 46291.

Value of Exhaust Steam in Producing Compressed Air for Mines (Die Verwertung des Abdampfes zur Erzeugung komprimierte Luft für den Bergbau). M. A. Laponche. The use of the low-pressure stage compressors in this connection. Serial, 1st part. 2000 w. Turbine—Aug. 20, 1913. No. 46060 D.

See also same heading, under Civil Engineering, Construction, and Hoisting and Mine Power, under MINING AND METAL-LURGY, Mining. See also Pneumatic Tools, under Machine Works and Foundries.

Compressors

Specifications for Performance Tests of Ventilators and Compressors für Leistungsversuche an Ventilatoren und Kompressoren). Discussion by several members of the Vereines deutscher Ingenieure on this subject. Ills. Serial. 1st part. 10000 w. Zeitschr des Ver deutscher Ing—Nov. 2, 1912. No. 38448 D. See also Rotary Machines, under Ma-

chine Elements and Design.

Costs

Cost of Producing Power Based on Iowa Coals, with a Comparison of Estimated Costs from Actual Tests. Data for estimating cost from a bulletin of the Iowa State College, originally presented by H. W. Wagner. 6000 w. Engng & Con—Feb. 19, 1913. No. 39933.

Economy

Economy: Hints for Power Users. F. R. Parsons. Calls attention to permissible economies. 1200 w. Prac Engr -May 8, 1913. No. 42066 A.

Electric Drive

Group and Individual Drives. A. G. Popcke. Analysis and comparison of in-

dividual motor-driven shop and engine-driven counter shafting. 3000 w. Am Mach—Dec. 19, 1912. No. 38263. The Use of Motor Drives for Shops. A. G. Popcke. Discusses the advisability of using individual motor drives for machine tools, the sizes to be used for various purposes. 5500 w. Am Mach-Jan. 2, 1913. No. 38734.

Reversing Motors for Machine Tools. A comparison of direct-Charles Fair. connected reversing motor drive with belt and pneumatic drives. Ills. 3000 w. Am Mach—Jan. 16, 1913. No. 39125.

POWER AND TRANSMISSION

Lubrication

Electric Drive for Fans and Blowers. S. R. Stone. Explains the uses of electrically driven fans, blowers, compressors, etc., in metal working plants, and gives formulae for determining the size of motor required. 2000 w. March 13, 1913. No. 40423. Am Mach-

Economies in the Use of Electric Power. W. E. Milns. Abstract of a paper read before the Birmingham Sec. of the Inst. of Elec. Engrs. Discusses the importance of technical advice in arranging an electric drive. Gives information concerning the electrical energy used in various trades. 1800 w. Elect'n, Lond-March 14, 1913. No. 40808 A.

Electric Drives for Sheet Shearing, Straightening and Bending Machines (Der elektrische Antrieb von Blechscheren, Richt- und Biegemaschinen). Georg Heymann. Wiring plans, controls and machines for rolling mill work. Ills. 1500 w. Stahl u Eisen—Feb. 13, 1913.

No. 40503 D.

Electric Drive in Machine Shops. Charles Fair. Discusses the advantages, increase in production and decrease cost. 2000 w. Pro Am Inst of Elec Engrs-Oct., 1913. No. 46339 F.

Electric Power

Electricity in Machine Shops. cusses some of the advantages and gives comparative costs on group and individual drive. Ills. 2500 w. Elec Rev & W Elect'n—March 29, 1913. No. 40949.

Cutting the Cost of Power for the Factory. Stuart Dean. Discusses the economies effected by judicious selection and use of electric motors or other equipment. 1800 w. Ir Age—April 17, 1913. No. 41273 C.

Electrically-Driven Planing Machine. Illustrations with brief descriptions. 500

w. Engng—Jan. 24, 1913. No. 39798 A. Considerations When Applying Motor Drives. A. G. Popcke. Illustrates and describes examples of applications to machine tools. 1500 w. Am Mach—Feb. 27, 1913. No. 40142. Gas Power

Recent Development of Gas Power in Europe. H. J. Freyn. Discusses the Diesel engines, gas turbines, gas cleaning methods, coke oven gas, etc.; also discussion. 7000 w. Jour Am Soc of Mech Engrs—Feb., 1913. No. 40150 D.

Lubricants The Chemistry of Cylinder Oils. Gives facts based on chemical Jones. analysis. 1600 w. Automobile-Oct. 31,

1912. Serial. 1st part. No. 37204.

The Economic Use of Lubricating Oils.
David A. Corey. Abstract of a paper read before the Nat. Assn. of Cotton Mfrs. Considers the select on of oils, leakage, re-use of oil, losses, oiling systems, etc. 3000 w. Ind Engng—Nov., 1912. No. 37334.

Purchase of Lubricating Oil by Speciation. A. D. Smith. Discusses the fication. A. D. Smith. difficulties, methods of testing, and related matters. General discussion. 16000 Pro Engrs' Soc of W Penn-Nov., 1912. No. 38398 D.

Apparatus for the Examination and Study of the Behavior of Valve and Cylinder Oils and Other Petroleum Lubricating Oils in Saturated and Superheated Steam, Carbon Dioxide, Air and Other Gases. P. H. Conradson. Illustrated description with table of comparative tests. 1200 w. Chem Engr—Nov., 1912. No. 37920 C.

Lubricating Oil. Harry Tipper. Remarks on the efficiency and use, considering the usual methods of determining the lubricating qualities, and their failure to satisfy requirements. 4500 w. S A E Bul—April, 1913. No. 42340 N. Specifications for Lubricating Oil A. D. Smith. Considers some of the difficul-

ties encountered in drawing specifications to insure satisfactory lubrication. 3000

 W. Col Engr—July, 1913. No. 48408 C.
 The Lubricating Value of Cup Greases.
 A. L. Westcott. (Abstract.) Report of investigations made to test a number of greases under a variety of conditions as to bearing pressure, temperature, and method of application, for coefficient of friction and general suitability as a lubricant. Ills. 3500 w. Jour Am Soc of Mech Engrs-July, 1913. No. 44027 D.

The Ossag Machine for Testing Oils (Machine Ossag à essayer les huiles). M. Gérard. Description of a recording instrument for testing lubricating oils. Ills. 3600 w. Rev Industrielle—June 21, 1913. No. 43585 D.

See also Fuels, under Combustion Motors, and Locomotive Lubricants, under RAILWAY ENGINEERING, Motive Power and Equipment.

Lubrication

The Economic Use of Lubricating Oils. The Economic Use of Lubricating Olis. David A. Corey. Abstract of a paper read before the Nat. Assn. of Cotton Mfrs., New London, Conn. Discusses oil handling and lubrication. 2500 w. Mech Engr—Dec. 27, 1912. No. 38884 A.

Engine-Cylinder Lubrication. Willis Lawrence. Discusses lubricants, favoring graphite combined with oil. 2000 w.

Power-June 10, 1913. No. 42736.

Lubrication at Steptoe Concentrator.

A. G. Marsh. Describes a system that resulted in a saving of 20 per cent in lubricant cost. 1800 w. Eng & Min Jour—June 21, 1913. No. 43107.

Mill Power

POWER AND TRANSMISSION

See also same heading, under Combustion Motors, and Machine Tools, under Machine Works and Foundries.

Mill Power

Driving Textile Mills by Gas. From a paper by Sydney F. Walter, in the Gas World. Considers the conditions for driving textile mills and the advantages of the electric drive and gas engine drive. Line drawings. 3000 w. Am Gas Lgt Jour—Aug. 25, 1913. No. 44582.

Motive Power

The Choice of Motive Power (Die Wahl einer Betriebskraft). Friedrich Barth. Comparison of power supplies, per cost per horsepower. Diagrams. Serial. 1st part. 3800 w. Zeitschr des Ver deutscher Ing—Oct. 5, 1912. No. 37446 D.

The Choice of Motive Power (Die Wahl der Betriebskraft). G. Klingenberg. A discussion on previous paper by Fr. Barth, pointing out some errors in calculation; and a reply by Herr Barth. Diagrams. 7700 w. Zeitschr des Verdeutscher Ing — March 15, 1913. No. 41460 D.

Motor Drive

Motor Drive for Machine Tools. F. E. Hanchette. A discussion of speed control. 3000 w. Elec Rev & W Elect'n—June 21, 1913. No. 43121.

Natural Powers

Harnessing Nature. Waldemar Kaempffert. Discusses the possibilities of engineering when combustibles will no longer be available. 4500 w. Sci Am—April 5, 1913. No. 41039.

Packin

Pressure Tests with Vulcanized Fiber, Ebonite and Metal for Stuffing-Box Packing (Druckversuche mit Vulkanfiber, Hartgummi und Metall für Stopfbüchsenpackungen). R. Baumann. Description of tests and their results. Ills. 1700 w. Zeit des Ver deutscher Ing—June 7, 1913. No. 43527 D.

Power Costs

Power Costs in a Manufacturing Plant.
H. J. Mistele. Explains how the economy
of a new plant was increased and describes the system of records kept. 2500
w. Power—Dec. 3, 1912. No. 38017.
Comparative Cost of Gas and Steam

Comparative Cost of Gas and Steam Plants. L. B. Lent. Gives relative cost of producing electric power in a small lighting plant near New York City. 1200 w. Power—Sept. 9, 1913. No. 45015.

Power Plants

Power Plant of the Charlton Mills. Warren O. Rogers. Illustrated description of a plant at Fall River, Mass., having six 250-h. p. return-tubular boilers

with dutch-oven furnaces, and some unusual features. 1000 w. Power—Nov. 26, 1912. No. 37783.

Power Plant Economics. Horace W. Flashman. Discusses particularly the development of an operating schedule appropriate to the working apparatus. 5000 w. Sch of Mines Qr.—Nov., 1912. Serial. 1st part. No. 38557 D.

Combining Steam and Gas Power. Illustrates and describes the Mesta Machine Co.'s power plant and its methods, calling attention to the important economies effected. 2000 w. Ir Age—Jan. 2,

1913. No. 38755 C.

The Prudential Insurance Co. Plant. Charles H. Bromley. Illustrated description of the power equipment for a great group of office buildings. 2500 w. Power—Jan. 7, 1913. No. 38840.

Critical Study of a 100-H. P. Power Plant to Use Waste Wood in Large Quantities (Étude critique d'une installation de force motrice de 100 chevaux dans une usine disposant de déchets de bois en grande quantite). R. E. Mathot. Study of the most economical engine adaptable to such fuel. Ills. 4000 w. Tech Mod—Dec. 15, 1912. No. 39071 D. Cost of Constructing a Turbo-Genera-

Cost of Constructing a Turbo-Generator Power Plant, Transmission Line, and Substructures. From an article by James W. Malcolmson, in Western Engng. Gives description and cost data concerning a plant at Douglas, Ariz., supplying power for mines in Mexico, 65 miles distant. 1500 w. Engng & Con—March 12. 1913. No. 40453.

The Power House at the New Keokuk Dam. M. F. McFarland. Illustrated detailed description of the power house at Keokuk, Iowa, and its equipment. 2200 w. Wis Engr—Jan., 1913. No. 40846 C.

The Design of Steam Power Plants. Earl F. Scott. First of a series of articles discussing details of design of small steam plants. 4000 w. Elec Engng—April, 1913. Serial. 1st part. No. 41327.

Central Power Plant of Montgomery, Ala. Warren O. Rogers. The main features are the manner of coal delivery, piping of the generating and auxiliary units, and the design of the pump-house. Ills. 1200 w. Power — April 1, 1913. No. 40964.

The Power Plants of the Southern Indiana Power Company. De Witt V. Moore. Describes a hydroelectric power plant having a steam auxiliary plant as a reserve in times of extreme low or high water. 3000 w. Indiana Engng Soc—1912. No. 41743 N.

The Power Plants of Textile Mills.

POWER AND TRANSMISSION

Pullevs

John A. Stevens. Presents some of the points to be considered in providing a power plant which shall do its best work in such mills. Ills. 7800 w. Jour Am Soc of Mech Engrs-Dec., 1912. 38507 D.

The Power Plants of Textile Mills. Discussion of John A. Stevens' paper. 1600 w. Jour Am Soc of Mech Engrs-

April, 1913. No. 41300 D.

The Design of Steam Power Plants.

Earl F. Scott. Gives an analysis of conditions determining selection of plant equipment. 4000 w. Elec. Engag—May, 1913. No. 41951.

New Power Plant at Weber Wagon Works. A. R. Maujer. Illustrated description of a plant containing two 750kw. bleeder-type turbines and water-tube boilers with Dutch-oven furnaces, using a combination of wood refuse and coal as fuel. 2500 w. Power—May 27, 1913. No. 42396.

Power Plant of Woolworth Building. Thomas Wilson. Brief Illustrated description of the boiler plant and auxiliaries, electrical installation, elevator equipment, heating and ventilating apparatus. 3000 w. Power—June 24, 1913. No. 43122.

Power Plant of the Madison Avenue Building. Thomas Wilson. Illustrated description of a small non-condensing office building plant. 1200 w. Power-July 1, 1913. No. 43320.

Power Plant of the Otis Building. A. R. Maujer. Illustrates and describes a carefully designed plant for a Chicago 16-story building. 4000 w. Power—

July 8, 1913. No. 43490.

Power-Plant Vibration and Methods of Isolation. Francis H. Davies. Discusses the nature of vibration and its transmission through soils of varied character, and different kinds of isolating material to absorb vibration. 2500 w. Power—Aug. 12, 1913. No. 44297.

Features of the Lemp Brewing Company's Plant. Illustrated description of a plant in St. Louis which furnishes light, power, heat and refrigeration for a large brewery. 2000 w. Power—Sept.

23, 1913. No. 45273.

Efficient Power Plant Operation. Ernest Cordeal. Calls attention to losses due to machinery in need of repair and pipe lines improperly maintained. 3800 w. Ry Age Gaz (Mech Ed)—Oct., 1913. No. 45666 C.

Iroquois Iron Co. Plant. Review of the process employed and illustrated description of a Chicago plant which burns byproduct gas in boilers supplying steam to a complete turbine installation. 1800 w. Prac Engr. Chicago—Oct. 1, 1913. No. 45576.

See also Water Power, under CIVIL Engineering, Water Supply.

Power-Plant Testing

Rules for Conducting Performance Tests of Power Plant Apparatus. Preliminary report of power test committee, codes of 1912. Ills. 42800 w. Jour Am Soc of Mech Engrs—Nov., 1912. No. 37879 D.

Power Resources

Sources of Energy Available for Power. Abstract of the presidential address by Dr. H. S. Hele-Shaw to the Assn. of Engrs.-in-charge. Deals particularly Engrs.-in-charge. Deals particularly with the coal supply, mineral oils, water and wind power, and heat derived from the earth. 3000 w. Elect'n Lond—Oct. 25, 1912. No. 37288 A.

The Sources of Energy Available to Man. J. A. Fleming. Calls attention to possible supplies not yet appropriated. 4000 w. Sci Am Sup—Nov. 30, 1912.

No. 87975.

See also Motive Power, under Power and Transmission.

Power Tests

Test Methods for Comparing Steam Engines and Gas or Combustion Motors (Méthodes d'essais comparés des machines à vapeur et des moteurs à gaz ou à combustion). Leon Letombe. Methods for determining the mechanical and thermal output. Ills. 6000 w. Tech Mod (Supplement) - March 15, 1913. No. 40606 D. Prime Movers

The James Watt Lecture. S. Z. de Ferranti. An account of the great diffi-culties James Watt had to overcome in order to bring about the utilization of his inventions, and a discussion of the recent developments in prime movers. (Abstract.) 2500 w. Engr, Lond-Jan. 24, 1913. No. 39810 A.

Pulleys

Table for Cone Pulley Diameters. J. H. O'Brien. Gives a table covering a wide range of conditions, explaining its use. 1800 w. Am Mach—Nov. 28, 1912. No. 37834.

Split vs. Solid Pulleys. H. A. Jahnke. Explains advantages of split pulleys and where they are useful. 1000 w. Power

-Nov. 5, 1912. No. 37273.

Tests of Wood, Paper and Steel Pulleys. H. A. Woodworth. Illustrated account of tests made to determine the breaking strength of pulleys of different kinds. 2500 w. Power—Dec. 10, 1912. No. 38100.

Crown Face Pulleys. George N. Van Derhoef. Review of the practice in pulley crowning and suggestions for obtaining

Rope Cables

POWER AND TRANSMISSION

Water Power

the best results. 2500 w. Mach, N Y-April, 1913. No. 40981 C.

Diagrammatic Study of Stepped-Pulley Drive (Zeichnerische Ermittlung von Stufenrädergetrieben). Rudolf Langner. Diagrams and their explanation. 4000 w. Zeit des Ver deutscher Ing-Sept. 27, 1913. No. 46044 D.

See Headgears, under MINING AND METALLURGY, Mining.

Rope Cables

Transmission by Rope Cables (Transmission par câbles en chanvre). F. Moguet. Mathematical calculations on the transmitting of power. Diagrams. 3000 w. All Indus—Oct., 1912. No. 37525 D.

Rope Driving

Efficiency of Rope Driving as a Means of Power Transmission. E. H. Ahara. Deals with a series of tests on transmission of power by rope drives under various conditions. Ills. 3500 w. Jour Am Soc of Mech Engrs—Aug., 1913. No. 44512 D

Shafting Losses

Factory Shafting Losses. J. T. Towlson. Discusses the importance of suitably aligning and leveling long lines of shafting and the construction and advantages of roller bearings. 1500 w. Prac Engr-Jan. 16, 1913. No. 39386 A.

See also Stresses, under Measurement.

Shafts

Alignment of Shafting. Reviews an address by Mr. Loggie calling attention to the loss of power that can be charged to line shafting, and describing a device for levelling and aligning shafting. 2200 w. Prac Engr-Nov. 7, 1912. No. 37622 A.

Critical Speeds of Shafting. A mathematical study. 700 w. Mech Wld—June 13,1913. No. 43140 A.

Shaft Supports

Intermediate Supports for Long Shafts. W. G. Dunkley. Discusses considerations governing the practical methods of design. 1200 w. Mach, N Y—Jan., 1913. No. 38724 C.

Shop Plant

Power Plant for Railroad Locomotive Shop. Illustrates and describes interesting features in the power plant of the main locomotive shops of the C. & N.-W. R. R. 2200 w. Prac Engr, Chicago—Sept. 1, 1913. No. 44861.

Tidal Power

Derivation of Power from Tidal Waters. C. A. Battiscombe. Discusses the difficulties to be surmounted in utilizing the tidal stream for power purposes. 2000 w. Nature—Aug. 28, 1913. No. 45023 A.

Turbo-Blowers

The Centrifugal Blower for High Pres-

sures. Henry F. Schmidt. Gives the essential elements of blower design in convenient form for reference. Discusses efficiencies and characteristics of types. 5800 w. Jour Am Soc of Mech Engrs-Nov., 1912. No. 37878 D.

Turbo-Compressors

Experiments on a Turbo-Compressor at Westerholt Mines (Untersuchung the eines Turbokompressors auf der Zeche Westerholt). Description of machine and layout, and results of tests. Ills. 2100 w. Glückauf-Nov. 23, 1912. No. 38420 D.

Vacuum Apparatus

Care of High Vacuum Apparatus. Suggestions on detecting and preventing leaks, use of thermometers to show operating defects, and the use of chemicals to detect contamination in water. 1800 w. Power-Dec. 31, 1912. No. 38703.

Water Power

Water Power and Water Supply Pre-liminaries. Robert E. Horton. Read before the Mich. Engng. Soc. Considers some common causes of failure, flow of streams, storage, etc. 2500 Rec—Jan. 18, 1913. No. 39193. 2500 w.

Instructions Respecting Water Powers. A. V. White. Information from a pamphlet prepared as a guide in the collection of data relating to inland waters. 3000 w. Ap Sci—Dec., 1912. No. 39309 C.

Water Power from the Mississippi. G. Donald Bell. Illustrated description of a large hydroelectric development at the foot of the Des Moines rapids in the Mississippi. 2200 w. Can Engr-Jan. 23, 1913. No. 39406.

A Review of Water Power Development in the South During 1912. J. A. 13000 w. Switzer. Also editorial. So

Elect'n—Jan., 1913. No. 39213. Harnessing the Public Water Power. C. J. Blanchard. Reviews progress in the development of natural resources. Ills. 2500 w. Sci Am-April 5, 1913. No. 41040.

The Development of Water Power in the United States. Peyton R. Anness. Discussion of possibilties, tendencies, and problems. Ills. 2500 w. Yale Sci M-

April, 1913. No. 41580 C.

Latent Power in the Streams of the South. Reviews the resources of power in southern streams, giving information concerning their present development. 1500 w. Mfrs' Rec — March 27, 1913. (Special.) No. 41556 N.

Columbia River Power Project Near the Dalles, Oregon. L. F. Harza. A description of the general engineering features of this large project, discussing possible power applications. Ills. 4500 w.

Boiler Economy

Jour Assn of Engng Soc-April, 1913. No. 41289 C.

Brunet Falls Water Power and Paper-Mill Development on the Chippewa River. Illustrated description of a combined hydroelectric and industrial project at Cornell, Wis., to be converted eventually into a station generating electrical energy only. 4000 w. Eng Rec—April 5, 1913.

No. 41115.

The Augst-Wyhlen Water Power Plant (Die Wasserkraftanlage Augst-Wyhlen). General description of plant developing power on both Swiss and German banks of the Rhine. This first number, including details of dam design, by G. Hunziker-Habich, other details to follow in later issues by other writers. Ills. Serial. 1st part. 2500 w. Schweiz Bau-March 29,

1913. No. 41443 D.
Supreme Court Decision on Water Power in St. Mary's River. 2500 Eng Rec.—June 21, 1913. No. 43113. 2500 w.

Procedure in the Investigation in the Most Economical and Advantageous Use of Water, Storage Capacity and Tempera-

ture for Water Power Plants (Verfahren zur Ermittelung der wirtschaftlich günstigsten Wassernutzung, Staubecken-grösse und Wärmekrafthilfe für Wasserkraftwerke). Dr. Leiner. The prepara-tion and study of daily and monthly charts. Serial. 1st part. 2000 w. Zeit f d ges Turbinenwesen—May 20, 1913. No. 43036 D.

An Overestimated Value. Pelham Bolton. Discusses misunderstandings as to the actual capacity, adaptation and worth of water power as compared with steam power. Ills. 2500 w. Cassier's-July, 1913. No. 43354.

The Water Power Plant at Cismon near the Ponte della Serra (Das Wasserkraftwerk am Cismon bei Ponte della Serra). A. Forti. Details of the construction of the masonry dam, 100 ft. high, log chutes, etc. Ills. Serial, 1st part. 1500 w. Schweiz Bau—June 21, 1913. No. 43522 D.

See also Hydroelectric, under Electri-CAL ENGINEERING, Generating Stations.

STEAM ENGINEERING

Accumulators

Theory of Steam Accumulators and Regenerative Processes. F. G. Gasche. An analysis of the action of various forms of regenerators or accumulators. Mathematical. Ills. 17700 w. Pro Engrs Soc of W Penn—Dec., 1912. No. 39939 D.

Auxiliary Units

Development in Auxiliary Units Between Exhaust Pipe and Boiler. William Weir. States the principles involved and considers their practical embodiment in various forms of apparatus, with some typical results of performance. Ills. 8500 w. Trans Inst of Engrs & Shipbldrs in Scotland—Oct. 22, 1912. No. 38286 N.

Development in Auxiliary Units Between Exhaust Pipe and Boiler. Discussion of William Weir's paper on this subject. Ills. 1100 w. Trans Inst of Engrs & Shipbldrs in Scotland-Oct. 22. 1912. No. 39552 N.

New Auxiliary Steam Plant of W. E. R. Co. E. A. Graham. Illustrated description of the steam turbine plant of the Winnipeg Electric Ry. Co. 4000 w. Can Elec News—Jan. 1, 1913. No. 38796 C.

Boiler Cleaning

Report on the Conditions of Work in Cleaning Steam Boilers and Flues. J. H. Warren. From the 1912 report of the Chief Inspector of Factories and Workshops. 1800 w. Mech Engr-July 4, 1918. No. 43712 A.

Boiler Construction

Recent Efforts in Boiler Construction (Neuere Bestrebungen im Dampfkesselbau). Friedrich Münzinger. Some of the improvements put forth by the leading German firms. Ills. Serial. 1st part. 5500 w. Zeitschr des Ver deutscher Ing -Oct. 26, 1912. No. 87450 D.

Boiler Corresion

Corrosion in Steam Boilers (Des Corrosions dans les Chaudières a Vapeur). La Maestra. Calculations and studies on the progress of corrosion. 7000 w. Tech Mod—Nov. 15, 1912. -No. 37513 D. See also Fuel Oil, under Steam Engi-

neering.

Boiler Design

Calculations for a Boiler With Corrugated Side Flues (Calcul d'une chaudière à tube foyer ondulé latéral). Ed. Kaschny. Mathematical calculations for design. Ills. 6000 w. All Indus—Nov., 1912. No. 87528 D.

Modern Tendencies in Boiler Construction (Neuere Bestrebungen im Dampf-kesselbau). Friedrich Münzinger. Describes some recent types of steeply-in-clined multitubular boilers, and others. Ills. 2000 w. Zeitschr des Ver deutscher Ing—Dec. 21, 1912. No. 39038 D.

Boiler Economy

Boiler Plant Reorganization (Kesselhaus-Reorganisation). Richard Kablitz. An account of economies effected by in-

Boiler Efficiency

STEAM ENGINEERING

Boilers

stalling improved machinery and changing plant methods. Ills. 3500 w. Zeitschr des Ver deutscher Ing-Oct. 26, 1912. No. 37453 D.

Boiler Efficiency

Increasing Steam Plant Efficiencies. Edward Ingham. Considers ways in which it is possible to increase the efficiency of 3500 w. Elec, Rev. Lond-Jan. 8, 1913. No. 39135 A.

Boiler-Efficiency Chart. John C. Parker. Gives chart and explanation of its use. 500 w. Power—June 10, 1913. No.

42732.

Steam Boiler Efficiency and the Most Economical Method for Absorbing Heat from Gases of Combustion. Discusses methods of reducing the cost of steam. 1500 w. Boiler Maker-Oct., 1913. No. 45770.

Boiler Failures

The Explosion of One of the Boilers on Board the Steamship "Gutenberg" (De ontploffing van één der stoomketels aan boord van de stoomboot "Guten-berg"). Describes the failure, gives an-alysis of the steel shell, and discusses probable causes, contributing to the failure. Ills. 3900 w. De Ingenieur—Sept. 28, 1912. No. 37478 D.

Boiler Houses

Boiler House Layouts for Foundries (Kesselhausanlagen auf Hüttenwerken). Schömburg-Witten. Boiler designs and layout plans. Ills. Serial. 1st part. 2700 w. Die Turbine-Feb. 5, 1913. No. 40558 D.

The Erection of the Structural Steel for a Large Boiler House. Alder W. Welch. Gives a digest of the specifica-tions. 2500 w. Engng & Con—Sept. 10, 1913. No. 45060.

Boiler Inspection

Boiler Inspection. Garland P. Robin-From an address before the Richmond Ry. Club. Reviews the history of boiler inspection in the United States. the laws passed, and explosions and their causes. Ills. 3500 w. Boiler Maker—Sept., 1913. No. 45214.

See same heading, under RAILWAY ENGINEERING, Motive Power and Equip-

ment.

Boiler Joints

Stresses in Unsymmetrical Boiler Joints. Abstract of a paper by S. H. Banaclough and A. J. Gibson. Account of an experimental investigation. 3300 w. Power—April 15, 1913. No. 41206.

Tension Due to Bending Stresses in Lap-Riveted Boiler Joints (Die Biegungs-spannungen in überlappten Kesselniet-nähten). E. Daiber. Precise experiments with mathematical and graphical studies

of the stresses induced. Ills. 4700 w. Zeit des Ver deutscher Ing-March 15. 1913. No. 41457 D.

Boiler Losses

The Analysis of Boiler Losses. John G. Moxey. Shows how to determine the heat distribution. 1800 w. Power-Aug.

12, 1913. No. 44293.
Chimney Losses (Die Kaminverluste). Herr Maercks. An examination of the waste heat in boiler operation, by mathe matical computations. Serial, 1st part. 2500 w. Feuerungs—Aug. 15, 1913. No. 44679 D.

Boiler Management

Advances in the Science of Regulation and Measurement in Boiler Heating Plants (Fortschritte auf dem Gebiete der Regelung und Messung in Feuerungs-und Heizanlagen). Otto Sprenger. De-scribes recent regulating valves and steam indicators. Ills. 3200 w. Feuer-ungs—Feb. 15, 1913. No. 40562 D.

Boiler Piping

Safe Piping for Boiler Plants. David Moffatt Myers. Illustrated description of a typical layout. 1400 w. Power-Dec. 10, 1912. No. 38102.

Boiler Plate

The Thickness of Boiler Sheets. Describes how boiler sheets vary in thickness and discusses the effect on the strength of the boiler. 1500 w. Boiler Maker—Oct., 1913. No. 45768. Thirty Boiler Plates with Form of

Fracture (Dreissig Kesselbleche mit Rissbildung). R. Baumann. Illustrating and defining ordinary causes of failure. 4900 w. Stahl u Eisen-Sept. 18, 1913.

No. 46002 D. Boiler Rules

The Board of Boiler Rules and Its Work. H. A. Baumhart. Explains conditions that led to the enactment of a boiler inspection law, and the rules formulated by the Ohio Board of Boiler Rules. 4800 w. Jour Cleveland Engng Soc—May, 1913. No. 42430 D. Board of Trade Rules for Boilers and Machinery. Fairfax. Points out the

more important modifications and additions which have been made. 1500 w. Mech Wld-Oct. 3, 1913. Serial, 1st part. No. 45854 A.

The Necessity for a Uniform Boiler Construction Law Rather Than for a Uniform Boiler Inspection Law. A. V. Cannon. Read before the Am Boiler Mfrs. Assn. Discusses laws of various states and gives the author's recommen-3500 w. Boiler Maker-Oct., dations. 1913. No. 45764.

Recent Boiler Construction for Steam Turbine Power Plants With Especial At-

Boilers

tention to Vertical Tubes (Neuere Dampfkesselkonstruktionen für Dampfturbinenkraftwerke unter besonderer Berücksichtigung der Steilrohrkessel). Fried. Münzinger. Reviews the requirements of such constructions and cites modern tendencies. Ills. Serial. 1st part. 2800 w. Zeit f d ges Turbinenwesen—Oct. 30, 1912. No. 37461 D.

Modern Boiler Problems. Col. E. D. Meier. Lecture before the Stevens Engng. Soc. Discusses the fitness of the water-tube boiler for modern conditions, the materials for its construction, and related matters. 5000 w. Stevens Ind—Oct., 1912. No. 38220 D.

The Steam Boiler. W. M. Francis.

The Steam Boiler. W. M. Francis. Read before the Prac. Refrig. Engrs. Assn. Discusses how to prepare boilers for inspection, and the care needed. 3000 w. Ice & Refrig.—Jan., 1913. No. 38914 C.

Installation, Care and Management of Steam Boilers. Norman Register. Read before the Prac. Refrig. Engrs. Assn. Discusses points necessary to obtain the best results. 3500 w. Ice & Refrig— Jan., 1913. No. 38913 C.

Heat Balance in Steam Boilers. Lionel S. Marks. Develops a comparatively simple method of calculating heat balance from the results of a complete test. 3000 w. Power—Jan. 14, 1913. No. 39120.

from the results of a complete test. 3000 w. Power—Jan. 14, 1913. No. 39120. The Operation of Low Pressure Heating Boilers. Instructions for the operation of such a system. 1800 w. Locomotive—Jan., 1913. No. 39503.

A Dust-Fuel Boiler and Its Uses. Hugh

A Dust-Fuel Boiler and Its Uses. Hugh V. Hart-Davis. Illustrated description of the Bettington boiler and its operation, showing that it efficiently consumes coaldust. Discussion. Plate. 6500 w. Trans Manchester Geol & Min Soc—Feb. 13, 1912. No. 39564 N.

The Niclausse Boiler (Les Chaudières Niclausse). A. Varlin. Principle characteristics of this type of water-tube boiler for marine purposes. Ills. 2400 w. Rev Industrielle—Jan. 11, 1913. No. 39076 D.

American Boiler Practice. A letter from F. W. Dean, giving illustrated description and information concerning horizontal return-tube boilers, and also a Scotch boiler and vertical fire-tube boiler. 3000 w. Engng — Feb. 7, 1913. No. 39920 A.

Horizontal Baffles in Water Tube Boilers. Albert A. Cary. Discusses different ways of baffling water tube boilers, the objections to each, and conclusions from experiments as to how and where baffles can best be used. Ills. 2000 w. Power—March 11, 1913. No. 40383.

Arrangement of Boilers on Board

Ship. J. Carson. States the problem assumed and explains its solution. 2000 w. Boiler Maker—May, 1913. No. 42013.

Boiler Inspection and Operation. Frank McManamy. Discusses the requirements of the Locomotive Boiler Inspection Law. General discussion. 11000 w. Pro W Ry Club—April 15, 1913. No. 42401 C.

Boiler Troubles, Their Causes and Their Prevention. Albert N. Dunlap. Read before the Nat. Assn. of Steam Engrs. Discusses scale and corrosion, and preventive methods. 3000 w. Ind Wld—May 5, 1913. No. 41839.

Scale, Pitting and Corrosion in Steam Boilers; Their Cause, Effect and Remedy. Discusses water-softening, describing a very simple apparatus, and considers various reagents for treating water in the boiler. 3500 w. Ir & Coal Trds Rev—May 9, 1913. No. 42297 A. Master Boiler Makers' Association.

Master Boiler Makers' Association. Abstracts of addresses, reports, and discussions. 3500 w. Ry Age Gaz (Mech Ed)—June, 1913. No. 42682 C.

Performance of a 450-H. P. Boiler with Oil Fuel. A. L. Menzin. A report of tests made at Mare Island Navy Yard. Ills. 1500 w. Eng News—May 29, 1913. No. 42564.

The Yarrow Boiler. A report of tests made on one of the boilers constructed for the Chilian battleship Almirante Latorre. Ills. 1500 w. Engng—May 16, 1913. No. 42540 A.

Central Heating Boilers for Lignite Briquettes (Zentralheizungskessel für Braunkohlenbriketts). Herr Weilandt. Typical examples for using this particular fuel. Ills. Serial. 1st part. 2200 w. Feuerungs—June 1, 1913. No. 43033 D. Construction of Underfired Boilers. W.

Construction of Underfired Boilers. W. E. Pinnegar. Suggestions for the design and construction of such boilers. Ills. 1800 w. Boiler Maker—July, 1913. No. 43728.

The Repair and Manufacture of Steam Boilers by Autogenous Welding. Henry Cave. Urges the necessity of placing restrictions on this work that dangers may be avoided. 1200 w. Boiler Maker—Aug., 1913. No. 44282. Refractories for the Modern Boiler

Refractories for the Modern Boiler Plant. Kenneth Seaver. Considers the conditions to be met by fire brick in actual service, the material and structural details. Discussion. Ills. 7000 w. Pro Engrs' Soc of W Penn—July, 1913. No. 44517 D.

The 1913 Board of Trade Regulations for Steam Boilers. Compares the new with the previous regulations. 2500 w.

Combustion

Mech Engr-Aug. 8, 1913. No. 44453 A. The Determination of Heat Balance (Zur Aufstellung von Wärmebilanzen). W. Hassenstein. An explanation of the methods in use in various countries. Serial, 1st part. 3700 w. Feuerungs— July 1, 1913. No. 44675 D.

Boiler Attachments. J. E. Terman. Considers the proper location of the water column and gage glass on various types of steam boilers, and of piping and fittings to use in the connections. Ills. 3500 w. Power—Sept. 30, 1913. Serial, 1st part. No. 45513.

Boiler Furnace Efficiency. William M. Faber. Discusses the design and management of such furnaces. General discussion. 5000 w. Jour Cleveland Engng Soc—Sept., 1913. No. 45431 D.

Distribution of Heat in Steam Boilers. Perry Barker. Read before the Am. Inst. of Chem. Engrs. A study of losses in the steam boiler and some test results, showing how the boiler efficiency was increased. 1500 w. Power—Sept. 16, 1913. No. 45129.

Space Occupied by Water Tube Boilers. C. R. D. Meier. A study of the question of floor space for boilers. Line Also discussion. drawings. 3500 w. Jour Assn of Engng Socs-Sept., 1913. No. 45459 C.

The Distribution of Heat in the Operation of Steam Boilers. Perry Barker. Read before the Am. Inst. of Chem Engrs. A study of the controllable losses. 2500 w. Sci Am Sup—Oct. 4, 1913. No. 45615.

Securing Efficient Results in the Manufacture of Boilers. Delbert E. Merrifield. Discusses causes of inefficiency in boiler shops, the investigations and changes in management that resulted in marked improvement. Oct., 1913. 5500 w. Boiler Maker-Serial, 1913. 1st part. **4**5766.

Waste Heat Boilers in Reverberatory Furnace Flues. S. Severen Sorensen. A comparison of results between Stirling and the Babcock & Wilcox boilers when used to recover heat from the flue gases of metallurgical smelting furnaces. Ills. 900 w. Min & Sci Pr-Oct. 11, 1913. No. 45908.

Boiler Plant of American Sugar Co. Ernest F. Learned. Illustrated description of this plant at South Boston, Mass. 1500 w. Power-Oct. 14, 1913. No. 45813.

A Water-tube Boiler for Pulverized Coal. Sectional elevation, cross section, and description of the Bettington watertube boilers using atomized fuel for steam generation. 1200 w. Ir Age—Oct. 2, 1912. No. 45598 C. Vertical Tubular Boilers (Steilrohr-kessel). F. Fetzner. Requires small space, has one or more superior and inferior boilers connected by vertical or slightly inclined tubes. Ills. Serial, 1st part. 2700 w. Feuerungs—Oct. 1, 1913. No. 46059 D.

The Schnabel-Bone Boiler (Der Schnabel-Bone-Kessel). Fritz Krull. Brief outline of the Bone surface combustion method, and description of this type of boiler employed in the process. Ills. 1800 w. Zeit f d ges Turbinenwesen—Aug. 30, 1913. No. 46067 D.

See also same heading and Marine Boilers, under MARINE AND NAVAL EN-GINEERING, and Stresses, under Measure-

Boiler Scale

Pneumatic Scaling Tools. Illustrates and describes a new form of tube-scaling tool and a new form of pneumatic scaling hammer. 1600 w. Engng—Jan. 17, 1918. No. 39475 A.

New Light on the Chemistry of Boiler Scale Prevention. Edgar T. Wherry and George S. Chiles. Surprising effects explained by colloid action. 3000 w. Engineering Magazine — June, 1913. No. 43097 B.

Boiler Specifications

Uniform Boiler Specifications. Thomas E. Durban. Read before the Am Boiler Mfrs' Assoc. Urging that steps be taken to secure a uniform specification for all states and showing its importance. 3500 Boiler Maker—Sept., 1913. 45217.

Boiler Tests

Tests of Jacobs-Shupert Boiler. Outlines tests made by Dr. W. F. M. Goss, and states results of the tests. Also editorial. 6000 w. Am Engr-Feb., 1913. No. 39719 C.

Tests of a 1000-H.P. 24-Tubes High B. & W. Boiler. Discussion of B. N. Bump's paper. 2000 w. Jour Am Soc of Mech Engrs—April, 1913. No. 41303 D. Boiler Waters

Chemical Indicators in Volumetric Work.—Preparation of Normal Solutions, and Determination of Chlorine in Boiler Water. H. T. Dyer. Directions for determining the degree of acidity or alkalinity and the amount of chlorine. 2500 w. Jour Am Soc of Nav Engrs— Aug., 1913. No. 45169 H

Soda-Ash for Boiler Waters. Charles H. Bromley. Deals chiefly with troubles experienced when using soda-ash in boiler waters. 1000 w. Power-Sept. 16.

1913. No. 45130.

Combustion

Flameless Combustion and its Importance in Industry (Die flammenlose Ver-

brennung und ihre Bedeutung für die Industrie). Richard Blum. Studies on the application of surface combustion in boilers of the Schnabel-Bone type. Ills. 4800 w. Zeit des Ver deutscher Ing—Feb. 22, 1913. No. 40541 D.

Principles of Combustion. Elementary explanation. 2500 w. Power—April 22, 1918. Serial. 1st part. No. 41568.

1913. Serial. 1st part. No. 41568.
Surface Combustion. William A. Bone.
Reviews briefly the work of early investigations, and the author's own work in this field, describing the new processes of incandescent surface combustion and the results. Ills. 10800 w. Trans N-E Coast Inst of Engrs & Shipbldrs—April, 1913. No. 42264 N.

Specific Heats of Gases for Engineering Calculations. G. B. Upton. A collection and comparison of the experimental data now available. 2200 w. Sib Jour of Engng—April, 1913. No. 42333 C.

The Bonecourt Process of Surface Combustion. C. D. McCourt. The process consists essentially in passing a mixture of gas and air in the proportions for complete combustion through or over porous bodies. Ills. 3500 w. Elect'n, Lond—May 2, 1913. Serial. 1st part. No. 41997 A.

Flameless Surface Combustion (Flammenlose Oberflächenverbrennung). B. Neumann. A review of Professor Bone's theories and designs as indicated in various periodicals. Ills. 3100 w. Stahl u Eisen—April 10, 1913. No. 42108 D.

Heating Furnaces with Flameless Gas Firing (Wärmöfen mit flammenloser Gasfeuerung). Herr Canaris. Brief description of two furnaces designed by the Bonecourt Company. Ills. 1000 w Feuerungs—Aug. 1, 1913. No. 44678 D. See Boilers, under Steam Engineering.

Condensation
A Theory of Surface Condensation. D.
B. Morison. Submits a theory for the solution of the problem of surface condensation. Ills. 3000 w. Jour Am Soc of Nav Engrs—Feb., 1913. No. 40855 H.

Surface-Condensing Plant. A. Beeston. Read before the Int. Assn. for Col. Mgrs. Discusses the principles of modern types of surface-condensing plants in general use. Ills. 2700 w. Ir & Coal Trds Rev—Feb. 28, 1913. Serial. 1st part. No. 40495 A.

Modern Condensing Systems. A. E. Leigh Scanes. Indicates the lines along which development in condensing systems has taken place during recent years. Ills. 5800 w. Inst of Mech Engrs—Feb. 14, 1913. No. 40312 N.

Cooling by the Discharge of Saturated Steam (Die Unterkühlung beim Ausfluss gesättigten Dampfes). A. Stodola. A series of experiments and their results. Ills. 4000 w. Schweiz Bau—April 26, 1913. No. 42133 D.

Condensation Systems Without Air Pumps (Kondensationsanlagen ohne Luftpumpen). E. Josse. Describes systems operating by refrigeration. Ills. Serial, 1st part. 3000 w. Zeit f d ges Turbinenenwesen—June 30, 1913. No.

43540 D.

The Breguet "Ejectair" (L'éjectair Breguet). Maurice Delaporte. Description of a novel condenser jet for both air and steam. Ills. 2800 w. Mem Soc Ing Civ de France—May, 1913. No. 43555 G.

Condensers

High Vacuum With Surface Condensers. P. E. Reynolds. Refers principally to large turbine units used with surface condensers having separate hotwell and dry-vacuum pumps. 1500 w. Power—Nov. 19, 1912. No. 37615.

Air in Surface Condensation. George A. Orrok. Gives results of investigations on the amount of air present in feedwater and the presence and effect of air in surface condensers, and describes an apparatus for measuring the air leakage. 2000 w. Jour Am Soc of Mech Engrs—Nov., 1912. No. 37876 D.

Test of a Surface Condenser: the Effect of a Spray at the Air-Pump Entrance. Fred Pickford and Gilbert Cook. Describes tests on a condenser which had been installed to take the steam from a 65-kw. turbo alternator. 2000 w. Engng—Jan. 17, 1913. No. 39474 A

Jan. 17, 1913. No. 39474 A.

New Theory of Condensation. A theory presented by D. B. Morison. A thin film of air greatly reduces the heat transmission of a condenser tube. To remove it most efficiently V-shaped passages are proposed. 1500 w. Power—Jan. 21, 1913. No. 39240.

Development in Marine Condensers. Gives the main factors controlling heat exchange, the steam and water filter, and condenser data and performances. 1000 w. Power—Jan. 21, 1913. No. 39239.

Large High Tension Condenser Test.

J. J. Brown. Gives data of a test of a

Large High Tension Condenser Test. J. J. Brown. Gives data of a test of a condenser guaranteed to produce 28.9 in. of mercury with 70 deg. of cooling water. The guarantee was exceeded. Ills. 2500 w. Power—Feb. 25, 1913. No. 40111.

Condensing Plants for Large Commercial Buildings. Letter from W. L. Durand and reply by Ira N. Evans, discussing the feasibility, from a commercial standpoint, of the arrangement proposed in the Jan. 21 issue. 3000 w. Power—Feb. 18, 1913. No. 39895.

Condenser Tubes

STEAM ENGINEERING

Engine Foundations

Comparative notes on Independent Steam Condensing Plants. W. A. Dexter. Abstract of paper read before the Newcastle Soc. of the Inst. of Elec Engrs. Surface and jet condensing plants are discussed and compared. Also air pumps. 4500 w. Elect'n, Lond-March 28, 1913. No. 41129 A.

Prime Movers and Condensing Apparatus. George E. Edwards. An explanation of points involved in maintaining satisfactory economy in steam units through condensing apparatus. 2000 w. Min & Engng Wld-May 3, 1913. No. 41877.

Air in Condensers. H. Fothergill. An analysis of ways which air may get into condensers, preventing the maintenance of high vacuums, and suggested remedies. Ills. 2000 w. Power-Oct. 28, 1913. No. 46213.

See also Turbines, under Steam Engineering.

Condenser Tubes

Condenser-Tube Corrosion. The lasting quality of condenser tubes is found to depend more upon their microstructure than upon their chemical compositions. Ills. 1200 w. Power-Oct. 14, 1913. No. 45814.

Barometric Condenser Piping. B. S. Nelson. Directions for properly piping a barometric condenser for reciprocating engines. Ills. 1000 w. Power—Oct. 21, 1913. No. 45946.

See Corrosion, under ELECTRICAL EN-GINEERING, Electro-Chemistry.

Cooling Pond

New Sharp Mill Spray Cooling Pond. Warren O. Rogers. Illustrates and describes cooling pond with 120 spray nozzles at New Bedford, Mass. 1000 w. Power-March 11, 1913. No. 40382.

Cooling Towers

Cooling Towers and Ash Silo at the Wilmersdorf Power Station (Kaminkühleranlage und Aschensilo der kraftstation Wilmersdorf). A. Boesig. tails in the construction of these reinforced concrete buildings. Ills. 2400 w. Beton u Eisen—Oct. 21, 1912. No. 37431 E.

Cooling-Towers at Edinburgh Power-Station. Drawings and description of two cooling-towers erected in connection with the city electric-light station. 1200 w. Engng—Feb. 28, 1913. No. 40484 A.

Cooling Towers for Industrial Establishments. Illustrated discussion of their construction and efficiency. 1700 w. Sci Am Sup—April 5, 1913. No. 41058.

Cooling Towers for the Power Plant. Everard Brown. Considers types and construction of towers, distribution of water and air, and principles of opera-

2500 w. Power-Oct. 7, 1913. No. tion. 45699.

Cylinder Packing

Pneumatic Cylinder-Packing Leathers. F. W. Bentley, Jr. Illustrated directions for replacing pneumatic cylinder packing, showing defects resulting from some methods employed. 1200 w. Power-Oct. 7, 1913. No. 45700.

Draft

The Balance Draft System of Furnace Regulation. Illustrated description of a System applied to boiler furnaces to maintain a uniform pressure for all rates of combustion. 1200 w. Power—Feb. 11,

combustion. 1200 1913. No. 39757. The Significance of Drafts in Steam Practice. Walter T. Ray and two or three bulletins on this subject, giving results of experimental investigations. 60 pp. 41637 N. U S Geol Surv-Bul 367. No.

Draft and Its Measurement. A discussion of points in chimney design. 2000 w. Power—Aug. 12, 1913. No. 44296.

Natural or Artificial Draft for Boiler Plants (Natürlich oder künstlicher Zug bei Dampfanlagen)? Friedrich Barth. Comparison by curves of natural and forced drafts at the chimney mouth, and the conditions under which each is more suitable. Ills. 7500 w. Zeit des Ver deutscher Ing-Sept. 13, 1913. 46039 D.

See also Boiler Losses, under Steam Engineering, and Fans, under Heating and Cooling.

Economies

Boiler Plant Economies. Erle Ormsby. Discusses the essentials of high-class results, types of boilers, scale, etc. 2500 w. Ice & Refrig—April, 1913. No. 41080 C.

Engine Balancing Engine Balancing. J. M. Duncan. Discusses the problem of balancing various types of engines. Ills. 5000 w. Ap Sci-Oct., 1912. No. 37699 C.

See same heading, under MARINE AND NAVAL ENGINEERING.

Engine Design

The Vagaries of Engineering Practice. J. Hamilton Gibson. Read before the Liverpool Engng. Soc. Especially con-siders engine and boiler design. 3500 w. Engr, Lond-Jan. 10, 1913. No. 39275 A. Engine Diagrams

Mean Effective Pressure. M. J. Eichhorn. Shows how the calculations may be simplified by the application of the methods of nomography. 2000 w. Ice & Refrig—Feb., 1913. No. 39630 C. Engine Foundations

Engine Foundations. J. Leslie. Dis-

Engine Valves

cusses the essentials of a proper foundaconstruct them. Ills. 2000 w. Mech Wld—Nov. 29, 1912. Serial. 1st part. No. 38127 A.

Engines

The Bicentenary of the Steam Engine. Information concerning the Newcomen invention of the reciprocating steam engine in 1712. Ills. 1500 w. Engr, Lond -Nov. 8, 1912. No. 37647 A.

An Improved Steam Engine. Illustrated description of the Paxman-Lentz steam engine. 1500 w. Prac Engr—Dec. 12, 1912. No. 38388 A.

The Overtype or High Superheated Steam Engine. George Duncan Moffat. Read before the Engng. Assn. of N. S. W. Describes this type of prime mover and gives information related. Ills. 4000 w. Aust Min Stand—Nov. 7 and 14, 1912. Serial. 2 parts. No. 38108 each B.

Progress of Wolf Locomobile Engines. F. E. Junge. Information from a recently published memorial which shows an increase during the past fifty years from 8 to 80 h. p. Ills. 1500 w. Power—Dec. 31, 1912. No. 38697.

The Lentz System Applied to Steam Engines. Seigfried Rosenzweig. Abstract of a lecture before the Ithaca Sec. of A. S. M. E. Illustrated description of this modern reciprocating engine and its advantages. Ills. 3000 w. Sib Jour of Engng—Jan., 1913. No. 39954 C. Steam Engines: Turbine and Rotary.

J. T. Fowlson. Reviews the development of rotary engines and discusses the es-sential differences between turbines and rotaries. 1300 w. Prac Engr—Feb. 20, 1913. Serial. 1st part. No. 40308 A. Water Blow in Steam Engines. A re-

port of tests carried out by a Belgian firm to determine the causes of water blow. Ills. 3000 w. Engr, Lond—April 18, 1913. No. 41778 A.

The Shuman-Haines Steam Engine. An illustrated account of the development, and information concerning recent tests. 3500 w. Engr, Lond-May 30, 1913. No. 42788 A.

Recent Improvements in the Reciprocating Engine Art. Illustrates and describes the Stumpf "uni-directional flow" steam engine, the Norton controlling gear, and other improvements. 2500 w. Sci Am-July 12, 1913. No. 43498.

The "Flat-Curve" Engine. A. D. Skinner. Aims to prove that the cause of the much greater steam consumption at light loads is due to valve leakage. 1600 w. Power—July 29, 1913. No. 43947.

An Interesting Steam Engine Conversion. Illustrations and brief description of the conversion of a three-crank compound steam engine to a uniflow engine. 300 w. Engr, Lond—July 18, 1913. No. 43978 A.

Economy of Compression in Steam Engines. Robert R. Fisher. Tests at the Kansas State University lead to conclusion that compression up to about 45 per cent. of the initial absolute steam pressure is advantageous. 1500 w. Power—July 29, 1913. No. 43948.

Calculations of Double Expansion Alternating Steam Engines (Il calcolo delle motrice a vapore alternative a doppia espansione). Guglielmo Piperno. mulae and coefficients for the calculation of cylinder dimensions, etc. Diagrams. Serial, 1st part. 3000 w. Industria—June 29, 1913. No. 43591 D.

The Drop-valve Engine in Its Modern Development. Discusses the latest development in drop-valve engine practice, describing engines equipped with this style of gear. 1000 w. Mech Wld—Oct. 3, 1913. Serial, 1st part. No. 45853 A. Lentz Engines in Baltimore Office Building. Warren O. Rogers. Illustrat-

ed description of the power plant of a large office building. 1500 w. Power— Oct. 21, 1913. No. 45945.

Reciprocating Engines or Turbines (Kolbenmaschine oder Turbine)? Hr. Kraft. A study of the relative economy of these types in naval service. Diagrams. Serial, 1st part. 1800 w. Turbine—Sept. 5, 1913. No. 46062 D.

Engine Tests

Reversing Engine and Turbine Efficiency Tests. J. A. Knesche. Comparison of the relative economy of the two machines for driving a blowing mill, with detailed data on rolling ingots. 5000 w. Ir Trd Rev-Jan. 2, 1913. (Special.) No. 38741 D.

A Comparative Trial Between the Triple Expansion Engine and Geared Turbines in Cargo Steamers. C. Waldie Cairns. Read before the N-E Coast Inst of Engrs & Shipblds. Gives results of this recent trial of vessels of the Cairn Line of steamships. Ills. 2500 w. Mech Engr-April 18, 1913. Serial. 1st part. No. 41758 A.

Engine Valves

Some Notes on the Slide Valve. Explains why lap and lead are used on the valve and the effect they have on the stroke. Diagrams. 1200 w. Pow-er—Dec. 24, 1912. No. 38359.

Mason's Regulator for Reducing Valves. Illustrated description of a double-acting regulator, used in connection with a relay reducing-valve system. 800 w. Engng-Jan. 17, 1913. No. 39476 A.

Evaporators

STEAM ENGINEERING

Fuel Gas

Setting Corliss Engine Valves. J. K. McIntyre. Drawings and directions for setting the valves for the first time. 1500

w. Power—Dec. 31, 1912. No. 38698.
See also Locomotive Valves, under RAILWAY ENGINEERING, Motive Power and

 $oldsymbol{E}$ quipm $oldsymbol{e}$ nt. Evaporators

The Lillie Quadruple Evaporator, U. S. S. Dixie. Illustrated description and report of test. 4000 w. Jour Am Soc of Nav Engrs—Feb., 1912. No. 40858 H. Tests Upon the Transmission of Heat

in Vacuum Evaporators. E. W. Kerr. Deals with tests made to determine the effect of hydrostatic head, density of heating steam, and other factors which influence the transmission of heat. Ills. 6000 w. Jour Am Soc of Mech Engrs— Oct., 1913. No. 46142 D.

Exhaust Steam

Development in Auxiliary Units Between Exhaust Pipe and Boiler. William Weir. Read before the Inst. of Engrs. & Shipbldrs. in Scotland. Considers the various forms of apparatus and some results of performance. Ills. 3000 w. Mech Engr—Nov. 1, 1912. Serial. 1st part. No. 37393.

Utilization of Exhaust Steam at Collieries and Mines. J. M. Gordon. Describes the applications and possibilities. 5000 w. Qr Bul of Can Min Inst-March,

1913. No. 41604 N.

Should Exhaust Steam Be Wasted? P. Barrett Coulston. Gives examples of installations of steam turbines to utilize steam ordinarily wasted in exhaust. 2000 w. Col Engr—Aug., 1913. No. 44121 C. See also same heading, under *Heating*

and Cooling.

Feed Pump Test of a Warren Vertical Single Boiler Feed Pump at the Naval Engineering Experiment Station, Annapolis, Maryland. Gives a description of the pump and method of test, with results. Ills. 3500 w. Jour Am Soc of Nav Engrs— May, 1913. No. 42922 H.

Feed Water

Softening Feed Water for Boilers. Describes the Royles' process and plant. Ills. 1800 w. Prac Engr-Nov. 14, 1912. No. 37706 A.

Softening of Boiler Water Feeds. H. A. Carter. A general review of methods of softening and the need of purification. 8000 w. Aust Min Stand—Feb. 27, 1913. No. 40995 B.

The Production of Additional Boiler Feed-Water by Means of Condensers in Stationary Plants (Die Erzeugung von Zusatzwasser zur Kesselspeisung durch Verdampferapparate im Betriebe ortfes-

ter Anlagen). A. Höpfi. Plans for a simple and economic condensing arrangement. Ills. 3000 w. Zeit des Ver deutscher Ing-March 22, 1913. No. 41464 D. Filtering Feed Water. Charles S.

Linch. Discusses the function of the feed filter, its most desirable location, requirements, etc. 1500 w. Int Marine Engag— June, 1913. No. 42600 C. Salt in Boiler Feed Water. E. E. Wil-

son. Considers the source of salt in boiler feed and the methods of eliminating it. 2200 w. Jour Am Soc of Nav Engrs-

May, 1918-No. 42921 H.

Fireboxes Riegel Watertube Firebox Design. S. S. Riegel. Drawings and description. 1000 w. Boiler Maker-July, 1913. No. 43730.

Fitting

Steam Pipe Death Traps. W. M. Wallace. Shows the need of more attention to steam pipe fitting; discusses explosions and their causes. Ills. 1800 w. Prac Engr—Sept. 25, 1913. No. 45683 A.

Practical Flue Gas Analysis. Harry Cox. Shows that a knowledge of chemistry is not necessary to operate the Orsat. 1500 w. Power—Nov. 19, 1912.

No. 37614. Determining SO. in Flue Gas. F. G. Describes a method which depends on filtering the SO, out from the SO, and then determining it. 1700 w. Eng & Min Jour-Nov. 23, 1912. No. 37764.

Heat Losses in Flue Gases. Discussion of heat lost up the chimney, method of estimating heat lost in flue gases, etc. 1000 w. Power—July 22, 1913. Serial,

1st part. No. 43945.

Flue Gas Analysis and Its Advantages. Arthur E. Jones. Abstract of a paper read before the Inst. of Marine Engrs. Urges the importance of installing CO₂ recorders and of the management of the air supply. 2500 w. Mech Engr—Oct. 17, 1913. No. 46232 A.

Working Pressures of Plain Steel Flues with Adamson Flanged Joints, Calculated to British Board of Trade Rules and also to Lloyd's Rules of British and Foreign Shipping. W. R. Allen. Tables and explanatory notes. 2000 w. Boiler and explanatory notes. 2000 w Maker—July, 1913. No. 43729.

Fuel Gas

Commercial Practice of Fuel Gas Production. Explains the theory and practice of producers as employed in making furnace gas. 6000 w. Ir Trd Rev—March 13, 1913. No. 40630.

Practical Knowledge in Gas Firing for

Fuels

sary to sucess, discussing them in order. 3000 w. Met & Chem Engng—March, 1913. No. 40328 C.
Utilization of Pulverized Fuel for

Boiler Plants (Erfahrungen an Gasfeuerungen für Dampfkessel). Herr Barth. Hints on the arrangement of burners, etc., for best results. Ills. 2400 w. Feuerungs—Feb. 15, 1913. No. 40560 D. See also Furnace Fuels, under Machine

Works and Foundries.

Fuel Oil

The Use of Oil as a Fuel. A. O. Krieger. A discussion of recent changes in the fuel oil market and prices. 2000 w. Eng

News-Nov. 21, 1912. No. 87781. Oil Fuel and the Corrosion of Boilers. Abstract from the memorandum of C. E. Stromeyer. The expense prohibits the use of oil in England, Germany and other countries, but its advantages and disadvantages are considered. Reports results of research work on the corrosion of iron and steel. 3300 w. Ele Lond—Nov. 1, 1912. No. 37890 A. Liquid Fuel, Its Use and Abuse. Elect'n.

N. Best. Describes liquid fuel, explaining its calorific value, and discusses its applications to boilers, furnaces, etc. General discussion. 10000 w. Pro N Y R R Club—Oct. 18, 1912. No. 37910.

Liquid Fuel in the Foundry. W. N. Best. From a paper before the Phila. Found. Assn. Suggestions for burning liquid fuel, the burners, etc. 1000 w. Foundry—Nov., 1912. No. 37237.
Oil Burning Government Smith Shop.

C. A. Harrington. Gives details of a successful oil-burning installation at the Portsmouth Navy Yard. 2000 w. Am Mach—Nov. 14, 1912. No. 37388.

Experiments with North Dakota Lignite in a Steam Power Plant and a Gas Producer. Calvin H. Crouch. Information concerning the extent of the lignite fields, and report of experiments showing the physical properties of the coal, and power plant tests. Ills. 4000 w. Jour Am Soc of Mech Engrs—Dec., 1912. No. 38505 D.

Experiments with North Dakota Lignite in a Steam Power Plant and a Gas Producer. Discussion of Calvin H. Crouch's paper. 1600 w. Jour Am Soc of Mech Engrs — April, 1913. No. 41308 D.

The Use of Low-Grade Fuels From the Mines of the Dortmund Mining District 15 (Ausnutzung minderwertiger Brennstoffe auf Zechen des Oberbergamtsbezirks Dortmund XV.). Herrn Bütow and Dob-belstein. Details some furnaces specially adapted to the use of these fuels. Ills. 2100 w. Glückauf—Dec. 28, 1912. 39026 D.

Pulverized Coal as a Fuel. H. R. Barn-States the requirements necesBoiler Firing. C. H. Wright. Considers the difficulties encountered in using pulverized fuel, with illustrated description of an installation that overcomes some of 1200 w. Elec Wldthe difficulties.

March 15, 1913. No. 40670.

The Economic Combustion of Low-Grade or Waste Fuels. David Moffat Myers. First of Three Articles discussing the subject. The present number considers the principles involved. 3000 w. Engineering Magazine—April, 1913. No.

40912 B.

The Economic Combustion of Low Grade or Waste Fuels. David Moffat Myers. Discusses furnaces and methods

suited to wood by-products. Second arti-cle of a series. Ills. 5000 w. Engineer-ing Magazine—May, 1913. No. 41632 B. The Economic Combustion of Low Grade or Waste Fuels. David Moffat Myers. This third article of a series considers the burning of bagasse, culm and city refuse. Ills. 4500 W. Engineering Magazine—May, 1913. No. 42489 B.

Pulverized Coal as a Fuel. A. W. Raymond. Deals with the method of burning the coal dust, and facts gained from investigation, experience and tests. 1500 w. Cement & Engng News—April, 1913.

No. 41256.

The Rational Utilization of Coal. F. E. Junge. Describes practice, common in Germany, in which inferior grades of coal are used at the mouth of the mines in coke ovens and producers. The gas is used for producing high-tension electric current and innumerable by-products are obtained. 2000 w. Power—April 1, 1913. No. 40965.

Fuel Problems of the Pacific. Foster Bain. Discusses coaling facilities on the Pacific, and the fuel oil and its The adoption by coastwise steamers. The bearing of the fuel distribution upon the new trade alignment expected to follow the opening of the Panama Canal. Discussion. 6500 w. Jour Can Mun

Discussion. 6500 w. Jour Can Mun Inst—Vol. XV. No. 42048 N.

The Specific Properties and Differences of Solid and Fluid Fuels and Their Scientific Importance (Die spezifischen Eigenschaften und Unterschiede der festen und flüssigen Brennstoffe und ihre technische Bedeutung). Dr. Aufhäuser. A chemical study of fuel values. 7300 w.

Glückauf—April 19, 1912. No. 42116 D. Gaseous Fuels in the Year 1911 (Die gasförmigen Brennstoffe in Jahre 1911). Drs. Bertelsmann and Hörmann. A study, in this part, of natural gas, flue

Fuels

gas, motor gas and water gas. Serial. 1st part. 2100 w. Oest Zeit f Berg u Hütten—April 19, 1913. No. 42122 D.

Estimating Heat Value of Fuel. Brief description of a coal calorimeter for measuring the heat, and explanation of method of obtaining heat value by calculation. 2000 w. Power—June 10, 1913. No. 42735.

Liquid Fuel. Vivian B. Lewes. This first lecture discusses the theory of the formation of oil. 6000 w. Jour Soc of Arts-May 23, 1913. Serial. 1st part.

No. 42738 A.

Efficiency Valuation of Fuels. W. F. wood. Calls attention to the import-Elwood. ance of other factors than British thermal units and the fusing point of ash. 2500 w. Col Engr—Aug., 1913. No.

44120 C.

The Specific Properties and Differences of Solid and Liquid Fuels and Their Scientific Importance (Die spezifischen Eigenschaften und Unterschiede der festen und flüssigen Brennstoffe und ihre tech-nische Bedeutung). Dr. Aufhäuser. An analysis and heating properties of various combustibles. 4200 w. Stahl u Eisen—July 24, 1913. No. 44608 D.

The Problem of Burning Pulverized Fuel. Sterling H. Bunnell. Reports

promising results with powdered coal in a vertical steam boiler. 1500 w. Ir Age —Sept. 18, 1913. No. 45204 C.

See Boilers, Oil Fuel, Fuel Oil and Fuel Gas, under Steam Engineering, and Fuels, under Combustion Motors, and under Automobiles, and same heading, under Railway Engineering, Motive Power and Equipment. See also Coal Dust, under Mining and Metallurgy, Coal and Coke.

Fuel Testing

Determining Coal Values. E. G. Bailey. Brief discussion of the determination of the calorific value of a coal. 1500 w. Mines & Min—Nov., 1912. No. 37185 C.

Gas-Firing

Points on Gas-Fired Boilers. K. Huessener. Gives results of investigations by the writer, discussing combustion arrangements, the two systems of efficient gas-firing, etc. Ills. 3500 w. Ir & Coal Trds Rev—June 13, 1913. No. 43170 A.

A System of Burning Producer Gas. C. M. Garland. Discusses the combustion of gases and the replacement of fuel oil, with special reference to the combustion of lean gases. Ills. 2500 w. Ir Age—Sept. 25, 1913. No. 45440 C.

Degree of Efficiency of Boilers Heated by Blast-Furnace and Coke-Oven Gases and Heat Requirements of Gas Engines (Wirkungsgrad von Dampfkesseln mit

Hochofen- und Koksofengas-Heizung und von Wärmeverbrauch Gasmaschinen). H. Ortmann. Tabular results of experiments with both fuels and a test with a gas engine. 2000 w. Stahl u Eisen-Aug. 21, 1913. No. 45378 D.

Gauges

Protection of Water Gauge Glasses. Alex. M. Gow. Discusses causes of breakage, precautions and illustrates and describes guards, shields and types of gauges. 2500 w. Locomotive—Jan., 1913. No. 39502.

Governors

Improvement in the Construction of the Valve Gear of Shaft Governors, with Remarks on the Theory of Centrifugal Gov-ernors (Fortschritte im Bau von Flach-regler-Ventilsteuerungen nebst einem Beitrage zur Theorie der Fliehkraftregler). R. Proell. Detailed mathematical study. Ills. Serial, 1st part. 5400 w. Zeit des Ver deutscher Ing-Aug. 16, 1913. No. 44658 D.

Heat Economy

Transformation of Energy (Umwandlung der Energie). A. Riedler. Dissertation comparing the effective power of internal-combustion engines with steam engines and turbines. 4500 w. A Rund—Aug. 31, 1913. No. 46053 D.

Indicator Cards

The Mean Indicator Card. George E. holes. Explains a method of using composite photography to obtain a mean indicator card quickly. 700 w. Engng—Jan. 10, 1913. No. 39259 A.

Indicator Diagrams

The Lanza Continuous Diagram Appliance for Engine Indicators. Illustrated description of the appliance. 800 w. Engng—Feb. 28, 1913. No. 40488 A. Characteristic Diagrams (Diagramm-Charakteristiken). Bruno Leinweber. A

thermodynamic study of indicator diagrams and their interpretation. 5500 w. Zeit des Ver deutscher Ing — April 5,

1913. No. 41469 D.

An Investigation of Professor Clayton's Method for the Study of Reciprocating Steam Engines (Examen de la méthode du Professeur Clayton pour l'étude des machines à vapeur à piston). M. Dwelshauvers-Dery. A further series of research contributed to previous investigations. Diagrams. 8000 w. Rev de Mecan — April 30, 1913. No. 43061 E + F.

Indicators

Design of Indicator Reducing Rigs. L. Westcott. Illustrates and describes several types of indicator reducing methods. 1500 w. Power—Nov. 19, 1912. No. 37616.

Indicators. James G. Stewart. De-

Piping

scribes experiments made to determine errors. Ills. 9500 w. Inst of Mech Engrs—Jan. 17, 1913. No. 39786 N.

See also Engine Diagrams, under Steam

Engineering. Intensifiers

The Design of Hydraulic Intensifiers. A. Lewis Jenkins. An analysis of plain, steam and steam-hydraulic intensifiers, both as to their design and most advantageous uses. Ills. 1500 w. Am Mach— Jan. 30, 1913. No. 39544.

Laundries

Design of Commercial or Steam Laundries. William Paul Gerhard. Describes a typical layout and the requirements for equipment and ventilation of a model steam laundry. Ills. 2500 w. Met-Work—Aug. 29, 1913. No. 44795.

Locomebile

The First American Locomobile. R. Low. Illustrated description of the "Buckeyemobile," a self-contained, supersteam-driven unit. 2000

Power—May 20, 1913. No. 42234.

Present Status of the Locomobile.

Warren H. Miller. Outline of this machine, which is a combination of boiler, engine and superheater, compactly as-sembled, with description of recent European and American types. Ills. w. Elec Wld—Aug. 16, 1913. 1500 44416.

800-Brake-Horse-Power Locomobile. Illustrates and describes two similar compound condensing superheated-steam lo-comobiles of 800 h.p. each. 1200 w. Engng—Oct. 3, 1913. No. 45859 A. The Uniflow Cylinder Adapted to Lo-

comobiles. Warren H. Miller. Outlines the most recent improvements in locomo-Utilization of the unidirectional steam-flow scheme for minimizing cylinder condensation. Ills. 1800 w. Wld—Oct. 4, 1913. No. 45682.

Losses in the Steam Cylinder. R. C. H. Heck. A study of general relations and various steam quantities, calculations of indicated steam consumption, and the construction of the diagram of specific steam rates. 2800 w. Power—Nov. 5, 1912. No. 37272.

Oil Fuel

Experiments with an Oil Burning Shaft Furnace. Albert L. Waters. A record of promising experiments which had to be abandoned for lack of capital. Ills. 2000 w. Eng & Min Jour—Aug. 2, 1913. No. 44129.

The Supply of Coal Tar, Tar Oils and Pitch. W. J. A. Butterfield. Considers the supplies available in England, prices, etc. 6500 w. Surveyor—Feb. 28, 1913.

No. 40473 A.

Oil as a Fuel. Reginald Trautschold. Discussion of the use of oil as a fuel for generating steam. 2500 March 4, 1913. No. 40301. 2500 w. Power---

Oil as a Supplementary Fuel in Steam Reginald Trautschold. Power Plants. Describes the equipment needed and the advantages secured. 2000 w. Engineering Magazine—Aug, 1913. No. 43915 B.

Requirements for Efficient Burning of Oil Fuel. R. T. Strohm. Discusses the essentials for the successful burning of crude oil or fuel oil. 1000 w. Elec Wld July 19, 1913. No. 43842.

Burners for Oil Fuel. R. T. Strohm. Discusses the important features of a good burner, and illustrates and describes types. 1000 w. Elec Wld—Aug. 16, 1913. Serial, 1st part. No. 44418. Cleaning of Oil Fuel. R. T. Strohm.

Illustrates and describes strainers used. 1800 w. Elec Wld-Sept. 13, 1913. No. 45118.

Methods of Spraying Oil Fuel. R. T. Strohm. Describes various systems and 1500 w. Elec Wld-Sept. 6, burners. 1913. No. 45012.

Pumping and Heating of Oil Fuel. R. T. Strohm. Illustrates and describes method of obtaining uniform oil pressure, and the object of the heater. 2200 Elec Wld-Sept. 27, 1913. 45495.

Oil Fuel for Steam Boilers. Strohm. Considers the factors that determine whether oil shall be used for fuel in preference to coal, and discusses the characteristics and constituents of oil. Elec Wld-Oct. 4, 1913. No. 2000 w. 45683.

See also Furnace Fuels and Furnace Heating, under Machine Works and Foundries, and Oil Fuel, under MARINE AND NAVAL ENGINEERING. See also Boilers and Fuel, under Steam Engineering.

Steam Power Plant Piping Details. William F. Fischer. Drawings and explanation of the general requirements of a well-designed piping system. 6000 w. Mach, N Y—Feb., 1913. Serial, 1st part. No. 39604 C.

Expansion Joints in Pipes (Kompensierende Rohrverbindungen). Henry Menk. Reviews types of expansion joints for superheated steam requirements. Ills. 2200 w. Die Turbine—Jan. 5, 1913. No. 40052 D.

The Flow of Steam in Pipes. A. E. Berggren. Applies data based on research work to one of the generally accepted formulæ for the flow of steam in pipes. 2500 w. V 1913. No. 41574 C. Wis Engr - March,

Pipe Sizes and Steam Velocities. C. W.

Stacks

Discussion of the Determining considerations in selecting sizes for highpressure piping in power stations, and velocities of steam. 1500 w. Power—April 22, 1918. No. 41565.

Expansion in High-Pressure Steam

Piping. Shows how to locate the anchorage of a simple piping arrangement to secure the best utilization of the material through a uniform distribution of the stresses. Ills. 1500 w. Ind Engng —Aug., 1913. No. 44158 C. The Conductive Resistance of Super-

heated Steam in Smooth and Corrugated Expansion Pipes (Leitungswiderstand überhitzen Dampfes in glatten und in gewellten Ausgleichrohren). C. Bach and R. Stückle. A comprehensive study of the relative merits of both pipes for use with superheaters. Ills. 5400 w. Zeit des Ver deutscher Ing—July 19, 1913. No. 44653 D.

Piston Rings

Pressure-Balanced Piston Rings. Illustrates and describes improvements recently introduced in connection with piston and valve rings. 1500 w. Engr, Lond—May 16, 1913. No. 42544 A.

Smoke

Smoke Perplexities of the Architect. Raymond C. Benner. Remarks on the rapid disfigurement and damage due to smoke, its effect on various materials, and the change wrought by the proper furnace and boiler equipment. 2200 w. Am Arch—April 16, 1913. No. 41323 C.

A Study on Smoke Consumption (Etude sur la fumivorite). A. Boyer-Guillon. A detailed review of the sub-ject with an historical sketch of enactments and devices, with recent appli-ances and their utilty. Ills. 6400 w. Rev de Mecan—July, 1913. No. 45380

E + F.
See same heading, under CIVIL ENGI-NEERING, Municipal.

Smoke Prevention

Practical Methods of Abating Smoke. J. M. Searle. Discusses combustion and describes the requisites of a locomotive stoker. Ills. Also general discussion. 9000 w. Pro Ry Club of Pittsburgh—Nov. 22, 1913. No. 39307 C.

New Methods of Approaching the Smoke Problem. Osborn Monnett. Outlines the methods of the Chicago Smoke Department, and their attempts to classify and tabulate smoke offenders. General distabulate smoke offenders. General discussion. 10000 w. Jour W Soc of Engrs—Dec., 1912. No. 39338 D.

Notes on Smoke Prevention in the Rhine-Westphalian Industries (Beiträge zur Beurteilung von Rauchschäden im rhenisch-westfälischen Industriegebiet).

Reviews the question of P. Rippert. smoke damage on vegetation; the value of smoke absorbers and work accomplished Glückauf—Dec. 7, 1912. No. 39005 D.
The Smoke Problem from an Econ-

omic Standpoint. Charles W. Fulton. Abstract of a paper read before the Textile Inst., at Manchester, Eng. Considers how present installations can be made smokeless with an increase of profit; and what is the best system to adopt for new installations. 4000 w. Mech Engr—May 9, 1913. No. 42281 A.

The Elimination of Smoke. Crawford. Lecture delivered at the New Century Club. The sources and causes of smoke are discussed, especially considering the railways and devices for the elimination of locomotive smoke: 1800 w. Sci Am Sup-June 14, 1913. No. 42822.

The Problem of Smoke Abatement. William A. Hoffman. The subject is discussed with special reference to what has been accomplished in St. Louis. Mechanical stokers and their advantages are explained. Ills. General discussion. Jour Assn of Engng Socs-10000 w. June, 1913. No. 43244 C.

See also same heading, under RAILWAY Engineering, Motive Power and Equipment, and Atmospheric Pollution and Smoke, under Civil Engineering, Municipal.

Stacks

Dimensions of Boiler Chimneys for Crude Oil at Sea Level and at Various Altitudes, with Correcting Factors for Weymouth's paper. 1000 w. Jour Am Soc of Mech Engrs—April, 1913. No. 41305 D.

Circular Smoke Currents in Flues. John R. Bell. Discussion on the natural movement of heated air and smoke in chimney and its bearing on design of flues. Ills. 1500 w. Metal Work—May 23, 1913. No. 42343.

Erecting a Steel Smoke-stack on a High Roof. Describes work executed for

the United Electric Light & Power Company, New York City. 2000 w. Eng Rec—May 24, 1913. No. 42378.

Repairs to a Reinforced-Concrete Chimney. C. E. Smith. Describes work on a chimney at Kansas City, Mo. Ills. 1200 w. Eng News—May 8, 1913. No. 41945.

The Stability of Brick Chimneys. Harold Cane. From a paper read before the Concrete Inst. Gives results of recent investigations. Ills. 1500 w. Ir & Coal Trds Rev—May 16, 1913. No. 42549 A. Chimney Design. Explains principles

Superheating

of natural draft and method of estimating the draft required. 2000 w. Power—Aug. 19, 1913. No. 44442.

See same heading, under Civil Engineering, Construction; and Boiler Losses and Draft, under Steam Engineering, and Smelter Flues, under MINING AND METALLURGY, Copper.

Steam

Dalton's Law in the Steam Plant. George F. Fenno. States the law and considers its application to vapors and the part of the law relating to evaporation. 1500 w. Power—Dec. 31, 1912. No. 38701.

The Specific Heat and Specific Volume of Steam at Pressures of 20 Atmospheres and Temperatures of 550 Degrees Cent. (Die spezifische Wärme und das spezifische Volumen des Wasserdampfes für Drücke bis 20 at und Temperaturen bis 550°C.). Max Jakob. Mathematical. Diagrams. 4800 w. Zeitschr des Ver deutscher Ing—Dec. 7, 1912. No. 39033 D.

Steam Consumption

Steam Consumption Computations. J. A. Knesche. Explains method and illustrates its application by examples. 1500 w. Power—Nov. 12, 1912. No. 37874.

Steam Engineering

See same heading, under MARINE AND NAVAL ENGINEERING.

Steam Engines

The Bi-Centennial of the Steam Engine. Erick H. Low. Brief history of the steam engine. Ills. 1000 w. Power—April 8, 1913. No. 41125.

Steam Flow

Theory and Experiment in the Flow of Steam Through Nozzles. J. B. Henderson. Read before the Inst. of Mech. Engrs. A summary of experimental work with statement of theory and suggestions for further experiments. Ills. 4500 w. Mech Engr—Nov. 22, 1912. No. 38025 A.

The Flow of Steam Through Pipes. H. V. Carpenter. Gives charts for determining the amount of steam which will flow per minute through a pipe of given diameter, illustrating the use by example. 800 w. Power—Dec. 17, 1912. No. 38217.

The Flow of Steam Through Pipes. H. V. Carpenter. Gives charts covering low pressures and large pipes, with notes. 500 w. Power — June 10, 1913. No. 42732

The Flow of Steam Through Orifices (Der Ausfluss des Wasserdampfes aus Mündungen). August Loschge. The results of numerous experiments. Ills. Serial, 1st part. 4200 w. Zeitschr des

Ver deutscher Ing-Jan. 11, 1913. No. 40040 D.

Steam Jacketing

Jacketing Applied to Steam Cylinders. Extract from an article by Dr. Hubert Hansel, in the Zeit des Ver. Deut. Ing. Shows the effect of superheated steam with and without jacketing, partial jacketing, and the economy. 2500 w. Power—March 18, 1913. No. 40689.

Steam Piping

Steam Power Plant Piping. William F. Fischer. The merits and demerits of cast-iron pipes and flanges, and riveted steel, brass and copper pipes are considered. 1000 w. Power—Nov. 5, 1912. No. 37274.

Steam Plants

The Utilization of Exhaust Steam (L'utilizzazione del vapore di scarico negli impianti termici). Giuseppe Brezzi. Paper presented at Congress for the Advancement of Science at Genoa, October, 1912. Serial. 1st part. 2100 w. Industria—Jan. 12, 1913. No. 39099 D.

An Instructional Steam Plant. Illustrated detailed description of an experimental steam engine for the University of Queensland. 1000 w. Engr, Lond—Aug. 22, 1913. No. 44928 A.

Steam Pressures

The Desirabilty of Using High Mean Referred Pressures. E. M. Bragg. Gives conclusions of R. Royds, Prof. Weighton, and others. 1600 w. Jour Am Soc of Nav Engrs—Feb., 1913. No. 40856 H.

Steam Pump

A New Direct-Acting Steam Pump. Illustrated description of an interesting pump, the valve gear of which is a striking departure, and possesses features which appear to place it quite in a class by itself. Mr. Wynnard Anthony is the patentee. 1500 w. Marine Engr & Nav Archt—March, 1913. No. 40460 A.

Stokers

See Mechanical Stokers, under RAILWAY ENGINEERING, Motive Power and Equipment.

Superheating

Sugden's Superheater. Illustrates and describes an improved design of sectional superheater and an improved damper arrangement. 800 w. Engng—Nov. 29, 1912. No. 38130 A.

The Regulation of Superheat Temperatures (Die Regelung der Heissdampftemperaturen). Generlich. Describes device employed at the German Babcock & Wilcox plant. Ills. 2400 w. Zeitschr des Ver deutscher Ing—Nov. 30, 1912. No. 38456 D.

The Use of Highly Superheated Steam. Gilbert E. Ryder. Shows that the ef-

Turbines

ficiency increases as the demands for power are increased in the operation of a superheater locomotive. 2300 w. Ry Age

Gaz—Jan. 31, 1913. No. 39600. Superheated Steam — Its Effect Upon Cylinder Power in Practice. Charles R. King. Gives dynamometer records of superheated and saturated steam locomotives from tests on the Italian State Railways, discussing the results. 4500 w. Engr, Lond—Feb. 14, 1913. Serial, 1st part. No. 40136 A.

Economy Due to Superheated Steam in Marine Practice. Walter M. McFarland. A brief discussion, with illustrative examples, of the economy which comes from the use of superheat. 1500 w. Mech Wld-April 4, 1913. Serial. 1st part. No. 41234 A.

Turbine Blades

Recent Tests and Experiments with Turbine-Blade Material for High Tem-peratures—Live Steam and Gas Turbines (Neuere Versuche und Erfahrungen mit Turbinen-schaufelmaterial für hohe Temperaturen-Heissdampf- und Gasturbin-Tests on copper. en). Herr Schulz. nickel, pure iron, bronze, etc., and results. Serial. 1st part. 2400 w. Die Turbine—April 5, 1913. No. 42150 D.

Turbine Design The Design of Discs (Die Berechnung er Scheibenräder). Heinrich Holzer. der Scheibenräder). Formulae and their derivation in the design of high-speed steam turbine discs. Serial, 1st part. 2600 w. Zeit f d ges Turbinenwesen-Sept. 20, 1913. 46069 D.

Turbine Governing
New Turbine Pendulums of the de Temple Governor Co. in Leipzig (Neue Turbinenpendel der Regulatorenbau-Gesellschaft de Temple in Leipzig). Otto Moog. New type of governors for water, steam and gas turbines, with details of theory and design. Ills. Serial. 1st part. 1800 w. Zeit f d ges Turbinen— April 20, 1913. No. 42153 D.

Turbine Plants

Steam Turbine Power Plants for Mine and Foundry Work in Westphalia, Belgium, Northern France and England (Dampfturbinenkraftanlagen auf Berg-und Hüttenwerken in Rheinland-Westfalen, Belgien, Nordfrankreich und England). K. Hoefer. General review of the plants using such systems. Ills. Serial. 1st part. 3600 w. Zeit f d ges Turbinenwesen-Oct. 10, 1912. 37460 D.

Turbine Nashawena Steam Warren O. Rogers. Illustrated description of one of the most up-to-date power plants in New Bedford, Mass., for cotton mills utilizing motor drive. 700 w. Power-Dec. 17, 1912. No. 38216.

Geared Steam Turbines. Sir William H. White. From London Times Engng. Sup. An account of their development for ship propulsion. 2000 w. Sci Am Sup—Nov. 23, 1912. No. 37785. Small Westinghouse Steam Turbine.

Illustrated detailed description. 1800 w. Power-Dec. 10, 1912. No. 38103.

The Application of the Steam in Exhaust and Live-Exhaust Steam Turbines, Especially in Connection with the Oerliken Double-Pressure Turbine (Die Verwertung des Dampfes in Abdampf- und Frischdampf-Abdampfturbinen mit sonderer Berücksichtigung der Oerlikon-Zweidruckturbine). J. Karrer. Charts showing economical action. 3200 w. Zeit f d Ges Turbinenwesen—Nov. 30, 1912. No. 38460 D.

Recent Developments in Curtis Steam Turbines. R. F. Halliwell. Read before the Manchester Assn. of Engrs. attention to the points in which this turbine differs from others and describes modern practice in the manufacture of the Curtis type. Ills. 2500 w. Mech Engr—Dec. 20, 1912. Serial. 1st part. No. 38882 A.

Large Turbo Units. J. P. Chittenden. Abstract of a paper read before the Rugby Engng. Soc. Discusses turbine effi-ciency and the losses in the present num-ber. 2500 w. Mech Engr—Jan. 10, 1913.

Serial. 1st part. No. 39253 A.
Steam Turbines of Variable Speed
(Dampfturbinen mit veränderlicher Tourenzahl). Gustav Eisner. Mathematical discussion. Diagrams. Serial. 1st part. 3600 w. Die Turbine—Dec. 20, 1912. No. 39030 D.

Recent Developments in Steam Turbines. H. T. Herr. Gives principles and information on the recent developments in the turbine art. Ills. 6000 w. Jour Fr Inst—Feb., 1913. Serial, 1st part. No. 40092 D.

Recent Developments in Steam Turbines. H. T. Herr. An illustrated review of turbine development and their applications, reliability, and related informa-tion. 10500 w. Jour Fr Inst—March, 1913. Serial. 1st part. No. 40883 D. The Field for Small Steam Turbines. W. J. A. London and Ashley P. Peck.

Discussion of the consideration of efficiency from the commercial standpoint and the field of application where small turbines are desirable. 3000 w. Power—

Feb. 18, 1913. No. 39893.
The Mixed Pressure Steam Turbine with Special Reference to the Use of the

Turbines

Steam Regenerator. E. D. Dickinson. Divides mixed pressure turbines into three types, outlining the conditions for which the different types are suited. 4000 w. Gen Elec Rev—Feb., 1913. No. 39614 C.

The 10,000 to 15,000 KW Rateau Steam Turbine at the New Plant of the Paris Electric Distribution Company (La turbine à vapeur système Rateau de 10,000-15,000 kw. des nouvelles usines de la Compagnie Parisienne de Distribution d'Electricitè). C. Monteil. Detailed description of construction of this turbine. Ills. and plate. 12,000 w. Tech Mod—Feb. 15, 1913. No. 40067 D.

Recent Developments in Steam Turbine Practice. K. Baumann. Reviews the history of the development, compares modern types, discusses output, speeds, governing, applications, results, etc. Ills. 74 pp. Inst of Elec Engrs—March, 1913. No. 40391 N.

Steam Turbines. B. A. Strait. An elementary treatment of the principles of the impulse and reaction turbines. Ills. 4000 w. Pro U S Nav Inst—March, 1913. No. 40920 E.

The Development of the Reaction Steam Turbine. J. A. MacMurchy. Reviews the history of turbine development. Ills. 2000 w. Ap Sci — Feb., 1913. No. 40387 C.

Acadia Coal Company's Steam-Turbine Plant. Illustrates and describes a recently completed generating station for the mines at Stellarton, Nova Scotia, burning culm. 2500 w. Elec Wld—March 1, 1913. No. 40255.

Recent Developments in Turbine Reverse Buckets. O. D. H. Bentley. Describes a nozzle block designed to overcome a defect in turbines of the Riedler-Stumff type. Ills. 1500 w. Power—April 15, 1913. No. 41207.

Jour—April, 1913. No. 41212.

The Commercial Testing of Large Steam Turbine Units. E. D. Williams. A summary of the equipment and procedure adopted in factory testing. 3500 w. Gen Elec Rev—May, 1913. No. 41815 C.

Condensing Plant for Steam Turbines. J. A. McLay. Read before the Assn. of Min. Elec. Engrs. Deals with plants of the surface type, briefly stating objections to other types. 3500 w. Ir & Coal Trds Rev—May 2, 1913. No. 42253 A.

Theory of the Reaction Turbine. R. L. Dougherty. Gives the theory and points

out its imperfections and limitations. 1500 w. Sib Jour of Engng—May, 1913. No. 42416 C.

Exhaust Steam and Two-Pressure Turbines (Die Abdampf-und Zweidruckturbinen). Karl Röder. Part one takes up the application, definition, construction, and general principles of exhaust utilization based on the Rateau system. Ills. Serial, 1st part. 4000 w. Zeit f d ges Turbinen—Apr. 30, 1913. No. 42154 D. Exhaust Steam Turbines. A. Alison.

Exhaust Steam Turbines. A. Alison. Summary from a report supplied by the Jun. Inst. of Engrs. Explains the work accomplished by the heat accumulator and low-pressure turbine. 2000 w. Prac Engr—May 29, 1913. Serial. 1st part. No. 42744 A.

Small Steam Turbines. Considers the main features of some of the small turbines now on the market. Ills. 2500 w. Engr, Lond—May 30, 1913. No. 42787 A.

Steam Turbines, with Special Reference to Mining Installations. A lecture by A. L. Ohlson, before the Assn. of Min. Elec. Engrs. A discussion of economical power production. Ills. 4000 w. Ir & Coal Trds Rev — May 16, 1913. No. 42548 A.

Testing Small Steam Turbines. R. C. Allen. Illustrates and describes apparatus and method used. 2000 w. Power June 10, 1913. No. 42731

—June 10, 1913. No. 42731.

Modern Steam Turbines (Les turbines à vapeur modernes). C. Monteil. A study of recent types of de Laval, Parsons, Rateau and Curtis turbines. Ills. 10800 w. Tech Mod (Supplement)—May 15, 1913. No. 43066 D.

Water Brakes for the Study of Steam Turbines (Freins hydrauliques pour l'étude des turbines a vapeur). A. Rateau. A study of their application for measuring the mechanical equivalent of heatills. 6800 w. Mem Soc Ing Civ de France—April, 1913. No. 43078 G.

Mixed-Pressure Steam Turbine. L. G. Hanmer. Excerpt from a lecture before Melville Council No. 9, Universal Craftsmen. The advantages are given showing how exhaust steam is utilized, and how live steam can be used. 2500 w. Power—July 1, 1913. No. 43821.

The Extraction of Steam from Curtis Turbines. R. H. Rice. Illustrates and describes two mechanisms for the extraction of compressure steam from Curtis turbines. 1200 w. Gen Elec Rev—July, 1913. No. 43325 C.

The Sturtevant Steam-Turbine. Illustrated description of a turbine designed to give a reasonable steam consumption without an extravagant rate of rotation. Plate. 1500 w. Engng—July 11, 1913. No. 43900 A.

Water Hammer

Exhaust Steam and Two-Stage Turbines (Ueber Abdampf- und Zweidruckturbinen). K. Röder. Extracts from a book by the author. A general description of turbines of these types. Ilis. 3300 w. Elek u Masch—June 22, 1913. No. 43543 D.

Steam Requirements of Exhaust and Two-Pressure Turbines under Varying Conditions of Service (Der Dampfverbrauch der Abdampf- und Zweidruckturbinen bei den verschiedenen Betriebsverhältnisse). K. Röder. A study by curves and tables of numerous conditions. Ills. 7000 w. Zeit des Ver deutscher Ing—July 5, 1913. No. 44646 D.

The Turbines of the Mississippi River

The Turbines of the Mississippi River Power Co. at Keokuk, Ia. States the requirements and illustrates and describes these turbines. 2200 w. Eng News—Aug. 21, 1913. No. 44571.

Aug. 21, 1913. No. 44571.

The Turbine Runners of the Mississippi River Power Co. at Keokuk, Iowa. H. B. McDermid. Explains how the transportation difficulties of these large runners were overcome. Ills. 1000 w. Eng News—Aug. 21, 1913. No. 44572.

Eng News—Aug. 21, 1913. No. 44572.
The Radial Flow Steam Turbine (Die Radialdampfturbine). Wilh. H. Eyermann. The construction and economical operation of this type. Serial, 1st part. 2200 w. Turbine—Aug. 5, 1913. No. 44667 D.

Improvements in Steam Turbine Construction and Present Position (Die Entwicklung des Dampfturbinenbaues und seine heutige Lage). Otto Schwarzweber. Part 1 presents a chronological summary of development. Ills. Serial, 1st part. 2200 w. Zeit f d ges Turbinenwesen—July 10, 1913. No. 44669 D.

The Efficient Maintenance of Turbine Machinery. Lieutenant Revord. Methods for ensuring economical working, and for reducing chances of breakdown. Ills. 2700 w. Shipbldr—Sept., 1913. No. 45310 C.

The Steam Friction of Turbine Wheels. William Kerr. Read before a Sci. Soc. in the Roy. Tech. College, Glasgow. An account of experimental research work. Ills. 6500 w. Engng—Aug. 22, 1913. No. 44924 A.

The Steam Friction of Turbine Wheels. William Kerr. Read before the Sci. Soc. of Glasgow Roy. Tech. College. An ininvestigation of steam frictional losses. 3000 w. Mech Engr—Oct. 17, 1913. Serial, 1st part. No. 46231 A.

Driving Systems for Condenser Auxiliary Machinery in Steam Turbine Plants. Heinrich Treitel, in A. E. G. Jour. Gives particulars intended to serve as a guide in the selection. 2000 w. Mech Engr—Aug. 22, 1913. No. 44912 A.

Condensing Plant for Steam Turbines. J. A. McLay. Deals with plants of the surface type. 2000 w. Mech Wld—Oct. 3, 1913. Serial, 1st part. No. 45855 A. The Ljungström Radial-Flow Steam Turbine. Illustrated detailed description

Turbine. Illustrated detailed description of a turbine of the reaction type. 1200 w. Elec Rev, Lond—Oct. 10, 1913. No. 45968 A.

See same heading, under Hydraulic Machinery, and under Machine Elements and Design; and Alternators, under Electrical Engineering, Dynamos and Motors. See also Geared Turbines, under Marine and Naval Engineering.

Turbine Wheels

The Deformation by Centrifugal Stress by Turbine-Wheels. Gives results of experimental investigations made by F. Samuelson. Ills. 800 w. Engng—May 9, 1913. No. 42286 A.

Valve Gear

Norberg Long Range Valve-Gear. Illustrated description of a valve-gear designed to give a long-range cut off without the customary two eccentrics, 700 w. Power—May 27, 1913. No. 42397.

Valves

Determining Reducing-Valve Sizes. J. Rowland Brown. Describes a scientific method of approximating the correct size of valve. 1000 w. Power—Sept. 23, 1913. No. 45278.

The Balancing of Piston Valves. Friedrich Becher. Shows that the assumption that the piston valve is a balanced valve is wrong. Gives a design in which the valve is balanced. Ills. 4900 w. Bul Int Ry Cong—Oct., 1913. No. 46223 G.

See same heading, under Hydraulic Machinery, and under Machine Elements and Design.

Waste Heat

The Utilization of Waste Heat from Furnaces. C. O. Bannister. Considers methods of using the waste heat, especially the preheating of air for combustion. Ills. 4500 w. Jour W of Scotland Ir & St Inst—Dec., 1912, Jan.-Feb., 1913. No. 41703 N.

A New Device for Waste-Heat Recovery. A. T. Shurick. Illustrated description of the Titlow apparatus and the operating expenses and results obtained. 1400 w. Coal Age—June 7, 1913. No. 42691.

Water-Hammer

Water-Hammer in Steam Engines (Les coups d'eau dans les machines à vapeur). F. Gyseling. A series of experiments to determine loss of efficiency. Diagrams. 3900 w. Revue Industrielle—Apr. 19, 1913. No. 42198 D.

TRANSPORTING AND CONVEYING

Aerial Tramway

Aerial Tramways

Cableways

Suspended versus Ropeways (Schwebebahnen oder feste Seilbahnen?). Hans Wettich. Discussion on the relative merits of the two systems, with examples. Serial. 1st part. 2600 w. Zeit d Oest Ing u Arch Ver—Sept. 27, 1912. No. 87435 D.

Scaling Mountain Peaks by Elevator. Illustrated description of the cable suspension railways which are working successfully in the Swiss Alps and in Tyrol. 3000 w. Sci Am Sup—March 15, 1913. No. 40637.

Lana-Vigiljoch Aerial Cableway. lustrated description of an aerial line for the conveyance of passengers between Lana and the summit of the Vigiljoch. 1500 w. Engr, Lond—Dec. 6, 1912. No. 38251 A.

The Aerial Passenger Tramway from Lana to Vigiljoch (Le chemin de fer aérien pour voyageurs de Lana au Vigiljoch). P. Lachasse. A system in Tyrol rising to 1153 meters in a distance of 1877 meters, and the cars in use. 4200 w. Rev Industrielle-Feb. 22, 1913. No. 40581 D

The Lana-Vigiljoch Suspended Railway (Die Schwebebahn Lana-Vigiljoch). G. Fühles. Details of an aerial tramway, for pleasure purposes, making an ascent of 1153 m. in a horizontal distance of 1.9 4900 w. Ills. Serial. 1st part. Zeit des Ver deutscher Ing-May 10, 1913. No. 43011 D.

The Aerial Passenger Tramway from Lana to Vigiljoch, Tyrol (Le funiculaire aérien a vayageurs de Lana au Viciljoch, Tyrol). Illustrated description of this novel line. Plate. 3200 w. Genie Civil-June 7, 1913. No. 43087 D.

Aerial Ropeway at Bayton Colliery. Illustrated description of a ropeway recently installed in Shropshire. 800 w. Engng—May 16, 1913. No. 42538 A. An Italian Aerial Tramway. Illus-

trated description of an aerial tramway installed to transport coal from the harbor of Savona to the town of San Giu-2000 w. Coal Age-June 28, seppe. 1913. No. 43316.

The Aerial Tramway for Passenger Traffic in Rio de Janeiro (Die Seilschwebebahn fur Personenbeforderung in Rio de Janiero). Albert Pietrokowski. Describes newly constructed pleasure tramway, ascending, in two sections, the peak of the Pao de Assucar; an elevation of 1370 ft. in a distance of 5000 ft. Ills. 2800 w. Zeit des Ver deutscher Ing-June 14, 1913. No. 43528 D.

Unusual Design of Overhead Tramway.

Illustrated description of a tramway in Utah designed for heavy tonnage. 1500 w. Eng & Min Jour-Aug. 16, 1913. No. 44423.

The New Passenger Tramway Up the Kohlererberg, near Bozen (Die neue Per-sonenschwebebahn auf den Kohlererberg bei Bozen). Ottokar Soulary. An aerial system with coach passenger cars, oper-

Jan. 10, 1913. No. 40046 D.

The Mont Kohlerer Passenger Funicular Railway near Bozen (Le funicular à voyageurs du mont Kohlerer Passenger Funicular à voyageurs du mont Kohlerer Passenger Funiculaire à voyageurs du mont Kohlerer près de Botzen). Caumont. Brief illustrated description of new line in the Austrian Tyrol. 1200 w. Genie Civil-Aug. 30, 1913. No. 45355 D.

Cable-Driven Suspended Passenger Railways (Seilschwebebahnen, mit Antrieb, zur Personenbeförderung). Hr. Wintermeyer. The general principles of the design of mountain hoists, cable attachments, etc. Ills. 4000 w. Elek Kraft u Bahnen-Aug. 24, 1913. 46086 D.

Ash Handling

Mechanical Ash Removers for Coking (Maschinelle Kokslöscheinricht-Plants ung für Kokereibetriebe). Wilhelm Reubold. Describes new devices specially Wilhelm adapted to large plants. Ills. 2000 w. Stahl u Eisen—Oct 24, 1912. No. 37408 D.

Ash- and Coal-Handling Equipments. Henry J. Edsall. Various types of equipment are discussed and the power plants for which they are adapted. Ills. 2000 w. Coal Age—July 12, 1913. Serial, 1st part. No. 43672.

See also Cooling Towers, under Steam Engineering.

Hoisting Buckets for Transporting Heavy Material (Bennes preneuses pour la manutention des matières pondereuses) J.-E. Giraud. A general review of all · varieties of dipper, hoist, rolling, orangepeel, and other buckets, in use in dredging, mining, conveying, etc. Ills. Serial, 1st part. 4500 w. Genie Civil—Feb. 8, 1913. No. 40072 D.

Cableways A Pleasure Cableway at the Imperial Salt Mines of Berchtesgaden (Seilbahn für Vergnügungsreisende im Kgl. Salzbergwerk zu Berchtssgaden). L. Schütt. Description of ropeway and cars for the transport of visitors, and material, etc. Ills. 2200 w. Zeitschr des Ver deutscher Ing—Jan. 11, 1913. No. 40039 D. The Surface and Underground Cable-

Coal Handling

TRANSPORTING AND CONVEYING

Conveyors

way of the German-Luxembourg Mining and Metallurgical Company in Dortmund (Die ober- und unterirdische Seilbahn der Deutsch-Luxembourg Bergwerks- und Hütten-A. G. bei Dortmund). Herr Rath. Describes interesting tunnel arrangements for transporting ore from mine to smelter, avoiding surface obstructions. Ills. Serial. 1st part. 2800 w. Glückauf—May 10, 1913. No. 43005 D.

Coal Handling

Mechanical Handling of Coal for British Locomotives. Charles John Bowen Cooke. Abstract of a paper read before the Inst. of Civ. Engrs. describing a plant at Crewe, on the L. & N.-W. Ry. 1500 w. Mech Engr.—Nov. 29, 1912. No. 38122 A.

Methods for Preventing the Formation of Coal Dust while Loading Vessels (Dispositifs réduisant la formation du poussier pendant l'embarquement du charbon dans les navires). J. E. Giraud. Describes various mechanical arrangements for eliminating coal dust. Ills. and plate. Serial. 1st part. 4800 w. Genie Civil—Dec. 7, 1912. No. 38493 D.

New Canadian Pacific Coal Handling Plant. Illustrated description of Hulett unloaders for handling coal at Fort William, Ont. 2200 w. Ir Age—Jan. 16, 1918. No. 89127 C.

Modern Coal Hoisting Plants (Neuzeitliche Kohlenförderanlagen). G. W. Koehler. Describes coal hoists, coal-car devices, coal chutes and other handling mechanism. Ills. Serial. 1st part. 2500 w. Gläsers Ann—Dec. 15, 1912. No. 39011 D

A Retail Coal Handling Plant on the Pacific Coast. Considers the handling of a semi-bituminous coal mined at South Wellington, Vancouver Island. Also describes a briquetting plant. 1200 w. Can Engr.—Jan. 30, 1913. No. 39620.

New Coal Handling Plant at Fort William, Ont., Canadian Pacific Ry. Illustrates and describes an extensive plant for unloading coal from lake boats. The plant is equipped with Hulett unloaders: 1500 w. Ry & Engng Rev—Feb. 8, 1913. No. 39752.

Coal and Ash Handling at Lake Shore Plant. A. D. Williams. Illustrated description of this feature of the plant of the Cleveland Electric Illuminating Co. 1500 w. Power — June 3, 1913. No. 42656.

Coal Transport and Loading Plant of the Soc. Anon. les Transports de Savone (Die Kohlenförder-und Stapellanlagen der Soc. Anon. les Transports de Savone). Albert Pietrokowski. Description of coal carriers, silos, aerial tramways, etc., in the harbors of Genoa and Savone. Ills. 3300 w. Zeit des Ver deutscher Ing—Apr. 12, 1913. No. 42137 D.

Belt Coal Conveyor at Middlesbrough. Illustrated description of an interesting type. 800 w. Engr, Lond—Sept. 26, 1913. No. 45747 A.

Recent Practice in the Construction of Coal and Ash Conveyors (Neuere Erfahrungen im Bau von Transportanlagen für Asche und Kohlen). W. Heym. Examples of recent constructions in Europe and America. 3000 w. Glaser's Ann—Sept. 15, 1913. No. 46015 D.

See also Conveyors, and Ore Handling, under Transporting and Conveying; and Colliers, under MARINE AND NAVAL ENGINEERING.

Conveyors

The Adair Face-Conveyor. Drawings and description of a coal face conveyor designed to occupy as little space as possible in the vertical direction when discharging. 2000 w. Col Guard—Nov. 22, 1912. No. 38027 A.

Apparatus for Transporting Material in the Brick Industry (Impianti per trasporto dei materiali nelle industrie ceramiche). Hubert Hermanns. Review of the various conveyors used and their practical arrangement. Ills. 2100 w. Industria—Jan. 5, 1913. No. 39098 D.

Cutting Factory Costs with Conveyor System. Illustrates and describes a gravity and power equipment installed for carrying and washing screw machine products. 1800 w. Ir Age—Feb. 6, 1913. No. 39665 C.

Experiments on the Power Requirements of Conveying Mediums (Versuche über den Kraftverbrauch von Fördermittel). Georg von Hanffstengel. A series of power curves for belts, chains, scrapers, worm screws, bucket elevators, and others. Ills. 5500 w. Zeit des Verdeutscher Ing — March 22, 1913. No. 41462 D.

Continuous Package Conveyors for Factories. W. H. Atherton. Classifies and considers various types of package conveyors and their applications. Ills. 4500 w. Manchester Assn of Engrs—Feb. 15, 1913. No. 43295 N.

Underground Conveying. Sam Mayor. Considers the application of conveyors for handling coal, the object sought, the advantages and disadvantages, types of conveyors, mode of operation, etc. 3500 w. Col Guard—May 30, 1913. Serial. 1st part. No. 42775 A.

Mechanical Handling of Materials. Reginald Nautschold. First of a series of articles on installation, maintenance

Cranes

and operation of conveying machinery. Ills. 3300 w. Can Engr—Aug. 21, 1913. Serial, 1st part. No. 44569.

Labor-Saving Conveyors Used in a Factory. Illustrates and describes interesting equipment, including an endless chain elevator and power and gravity carriers for handling screw machine products. 1500 w. Ir Age—Aug. 7, 1913. No. 44198 C.

Practicable Loading and Conveying Appliances (Fahrbare Verlade- und Fördervorrichtungen). Hub. Hermanns. general description of conveyors, chiefly the bucket type, for use in grain and coal elevators, etc. Ills. 3000 w. Zeit des Ver deutscher Ing-July 5, 1913. No.

44644 D. Portable Loading and Conveying Ma-From an article by H. Hermans in Zeit des Ver Deut Ing. Drawings and descriptions of a number of recent German constructions. 1200 w. Ind Engng—Sept., 1913. No. 44939 C. See Coal Handling and Elevators, under Transporting and Conveying.

Recent Crane Construction for Special Duties (Neuere Kranbauarten für Sonderzwecke). C. Michenfelder. Describes special designs for use in pickling and ice plants. Ills. 2700 w. Zeitschr des Ver deutscher Ing-Oct. 12, 1912. No. 37448 D.

The Shaw Electric Monorail System of Traveling Cranes. Illustrated detailed description. 800 w. Ry & Engng Rev—

Dec. 14, 1912. No. 38226.

Electrical Equipment of Modern Mill Cranes. H. F. Stratton. Illustrates and describes the development of dynamic braking hoist controller and its application to cranes, with a discussion of the economies effected. 3000 w. Ir Trd Rev

—Jan. 2, 1913. No. 38745 D. Electric Cranes in Iron and Steel Works. H. H. Broughton. Deals with the design, construction and application of electric cranes. Ills. 5500 w. Elect'n, Lond—Dec. 13, 1912. (Special.)

38847 D.

The Design and Construction of Shop Cranes. Frank W. Suffield. Abstract of a paper before the Birmingham Assn. of Mech. Engrs. Deals particularly with the general design of cranes, discussing details, materials, etc. 4500 w. Mech Engr—Jan. 31, 1913. No. 39788 A. Shop Cranes—Their Design and Con-

struction. Frank W. Suffield. Abstract of paper read in Birmingham, Eng. Discusses types and details. 3500 w. Mach, N Y-Aug., 1913. No. 44080 C.

Crane Installation at the Società degli

Alti Forni, Fonderie ed Acciaierie di Terni (Die Krananlagen der Società degli Alti Forni, Fonderie ed Acciaierie di Terni). H. Thieme. Illustrated account of the types of overhead cranes at this Italian foundry, and their electric control. 3500 w. Zeitschr des Ver deutscher Ing-Jan. 18, 1913. No. 40043 D.

What the Crane Follower Should Know of Slinging and Making Hitches. John Riddell. Suggestions for the practical handling of electrical machinery. Ills. 2500 w. Gen Elec Rev—March, 1913. No. 40247 C.

150-Ton Crane for the Military Port at Lorient (Grue de 150 tonnes du port militaire de Lorient). R. Bazin. The main details of this revolving crane. Ills. and plate. 1600 w. Genie Civil-Feb. 22, 1913. No. 40595 D.

Crane Plant of an Italian Steel Works. Dr. Alfred Gradenwitz. Brief illustrated description of the more important cranes in an installation at Rome, Italy. 2500 w. Elec Rev, Lond—March 21, 1913. No.

40999 A.

Travelling Gantries for Bridge Erection in India. Illustrated description of the electrically-driven travelling gantries for use in the erection of fifteen spans of

the Lower Ganges Bridge, Sara. 500 w. Engng—April 11, 1913. No. 41391 A. Advances in the Use of Magnet Cranes (Ueber Fortschritte in der Verwendung des Lasthebemagneten). Hubert Hermanns. A review of recent improve-ments and applications. Ills. 2800 w. Elek u Masch — March 23, 1913. No.

Compensated Rapid Luffing-Crane with Self-Balanced Jib. Illustrated description of a crane invented by A. H. Mitchell. 700 w. Engng-May 9, 1913. No. 42288 A

H. M. New Stationary Office and Stores. Illustrated description of an unusual system of building. Temporary steel gantries have been erected for carrying travelling cranes. Particulars concerning the building are also given. 1800 w. Engr., Lond — May 30, 1913. No. 42789 A.

The Compensating Quadrant Crane. Harry W. Broady. Aims to give a somewhat detailed description of this new crane, from both the technical and practical side. Ills. 2200 w. Int Marine Engrg—July, 1913. No. 43421 C.

40-Ton Steam Titan Crane for East London. Illustrated description of a crane for East-London harbor, South Africa. 500 w. Engng—Oct. 3, 1913. No. 45861 A.

A Foundry Notable for Transporting Drawings and description of Devices.

Dock Machinery

TRANSPORTING AND CONVEYING

Ore Handling

an unusual adaptation of the monorail and trolley crane in the new South Works of Case Threshing Machine Co., Racine, Wis. 1700 w. Ir Age—Oct. 9, 1913. No. 45762 C.

The Development of Magnet Cranes (Die Entwicklung von Hebenmagneten). F. Wintermeyer. General outline of the history, construction, capacity and economy of electric cranes. Ills. Serial, 1st part. 2700 w. Elek Rund—Sept. 11, 1913. No. 46071 D.

See also Tower Cranes, under Civil Engineering, Construction; and Regulators, under ELECTRICAL ENGINEERING, Distribution.

Dock Machinery

A Ship Elevator for Unloading Sacked Articles (Schiffselevator zum Ausladen von Sackwaren). Gustav Schwanda. A conveyor built by Pasckis & Paar, Vienna, for handling cement, flour, salt, coffee, and other sacked articles. Ills. 2400 w. Zeitschr des Ver deutscher Ing—Nov. 30, 1912. No. 38454 D.

Elevators

Innovations in Electric Elevator Construction (Neuerungen im Bau elektrischer Aufzüge). W. Feld. Discusses self-acting elevators, automatic safety catches, and other recent devices. Ills. Serial, 1st part. 1600 w. Schweiz Bau—Jan. 4, 1913. No. 40027 D.

Operating Characteristics of the Modern Passenger Elevator. E. F. Tweedy. Outlines the development of the successful types, discussing the merits and demerits of each type of drive and suspension. Also the method of determining the number and size of elevators required, using a curve chart. 5500 w. Gen Elec Rev—July, 1913. No. 43324 C.

Elevators: Their Uses and Abuses. B. C. Van Emon. Describes elevators for different uses, and gives information concerning them. 5400 w. Jour Assn of Engng Socs—Oct., 1913. No. 46149 C.

Wet Bucket Elevator Design. Arthur O. Gates. An investigation of the mechanics, a comparison of results with present practice, and suggestions for improvements. 2500 w. Eng & Min Jour—Oct. 18, 1913. No. 45936.

Freight Handling

Freight Handling System for a Warehouse. Illustrated description of a telepherage system for handling detachable motor truck bodies loaded with packages. 1200 w. Eng Rec—Dec. 28, 1912. No. 38574.

Mechanical Transferage at Railway Shops and Terminals. H. McL. Harding. Describes the application of machinery to lifting, lowering, and transferring miscellaneous articles at terminals. Illa. 9500 w. Pro W Ry Club—Nov. 19, 1912. No. 38624 C.

Modernized Merchandise Handling—the Result of Specialization. E. D. Levy. Deals with methods in vogue on the Frisco Railroad, describing in detail the plan of handling. Also discussion. 15000 w. Pro St Louis Ry Club—June 13, 1913. No. 43985.

Grain Driers

American Grain Driers (Amerikanische Getreidetrockner). J. F. Hoffmann. Illustrations and descriptions of methods employed by large American companies. 4000 w. Zeit des Ver deutscher Ing—May 24, 1913. No. 43013 D.

Grain Elevators

Modern Grain Storage Centers. William A. Day. Illustrates and describes the great grain elevato. systems in America. 3000 w. Cassier's Mag—Nov., 1912. No. 38361 B.

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Handling System

The Handling of Material in an Implement Plant. Illustrates and describes the extensive use of the mono-rail trolley system in works at Rockford, Ill. 1800 w. Ir Trd Rev—May 1, 1913. No. 41794.

Hoisting Hooks

Charts for Hoisting Hooks. Axel K. Pedersen. Gives charts for checking the capacity of a hook from its dimensions. 1500 w. Am Mach—Dec. 26, 1912. No. 38543.

Mail Railway

A New Mail Carrying Railway. Illustrated description of a system experimentally tried out at the Paterson, N. J., plant. 1200 w. Sci Am—Oct. 4, 1913. No. 45613.

Electric Carrier Railways for Rapid Transfer of Mail and Express. Describes systems for the transfer of mail and light freight to distant parts of large cities. Ills. 2500 w. Eng News—Oct. 2, 1913. Serial, 1st part. No. 45647.

Ore Handling

A New Method of Handling Ore in Incline Shafts of Flat Dip. E. J. Way. Illustrated description of the conveyor system for handling the large tonnage of ore. 3500 w. S African Min Jour—Sept., 1912. (Special.) No. 37852 N.

Ore Unloading Plant on a Curved Dock.

Ore Handling

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Gas

Illustrates and describes the unloading machines used at the B. & O. railroad plant at Lorain, Ohio. 1800 w. Ir Age
-Nov. 28, 1912. No. 37930 C.

Mixing, Hoisting and Charging Equipment for Handling Coal and Minerals. Describes installations for handling 900 tons of material a day. Ills. 1500 w. Eng Rec—Dec. 7, 1912. No. 38081.

Moving Minerals in Thin Flat Beds.

Illustrates and describes swinging chutes, scraper conveyors and shaking conveyors for transporting minerals underground. 1500 w. Mines & Min-Jan., 1913. No.

38712 C.

Modern American Loading Stations for Ores and Coal (Neuere amerikanische Verladeanlagen für Erze und Kohlen). A. Bergman. Outline of ore-handling methods at the larger docks on the Great Lakes, New York, and Philadelphia. Ills. Serial, 1st part. 3500 w. Zeit des Ver deutscher Ing-Apr. 26, 1913. No. 42148 D.

The Development of Ore Unloading on the Great Lakes. J. H. Stratton. A review of methods used since 1852, illustrating and describing the unloading machines. Discussion. 5000 w. Jour Cleve-Engng Soc-July, 1913.

44039 D.

Hulett Dischargers and Their Use in Germany (Hulett-Entlader und ihre Ver-

wendbarkeit in Deutschland). Richard Borchers. Description of the Hulett crane for the unloading of ore ships or ore cars; its economy and operation in Germany. Ills. 7500 w. Stahl u Eisen—July 3, 1913. No. 44600 D.

See also Ore Docks, under CIVIL ENGINEERING, Waterways and Harbors.

Sand Handling

An Efficient Foundry Sand-Handling Plant. Illustrated description of a plant installed at Charles City, Ia. 2000 w. Foundry—Jan., 1913. No. 38707.

Shear-Legs

Design for the Foundation of 150-Ton Leonard Goodday. Shear-Legs. Diagrams and description of work in England for the support of hoisting tackle.

1000 w. Can Engr—Sept. 11, 1913. No. 45124.

Telpherage

Telepherage Plant at a German Electricity Works. Illustrates and describes a conveying plant at Frankfurt-on-the-Main. 1200 w. Col Guard—Aug. 1, 1913. No. 44315 A.

Trippers

Application of Electromagnetic Tripping Devices. George M. Meyneke. Drawings and descriptions of electrical devices which prevent damaging machines or producing defective work. 1500 w. Mach, N Y—Oct., 1913. No. 45602 C.

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Acetylene

Acetylene Lighting. C. Hoddle. stract of a paper before the Ill. Engng. Soc., London. Reviews the production and uses of acetylene, its efficiency, etc. 2000 w. Archt, Lond—Jan. 17, 1913. No. 39454 A.

Agricultural Machinery

Development and Status in the Science of Agricultural Machinery (Entwicklung und Stand der Technik landwirtschaft-Maschinen). Gustav Fischer. The first number gives the history and present development of seed drilling machines. Ills. Serial, 1st part. 3600 w. Zeit des Ver deutscher Ing—July 26, 1913. No. 44655 D.

Cotton Mills

Recent Developments in Lancashire Cotton Mills. Illustrated discussion of ments. 2800 w. Engng—April 4, 1913. No. 41239 A. Ethyl Alcohol advances made in the various depart-

Density and Thermal Expansion of Ethyl Alcohol and of Its Mixtures with Water. N. S. Osborne, E. C. McKelvy

and H. W. Bearce. Description of experimental work and results. Bibliography of the literature. Ills. 474 pp. Bul Bureau of Stand—April 15, 1913. No. 43339 N.

Expositions

Machine Types and Machine Material at the Turin Exposition, 1911 (Allgemeiner Maschinenbau und mechanische Ma-terial-bearbeitung auf der Weltausstell-ung Turin 1911). Herr Hundsdörfer. Illustrated review of the exposition. Serial. 1st part. 2000 w. Glaser's Ann— Oct. 15, 1912. No. 37421 D.

Flood Effects

Rehabilitation from the Dayton Flood. K. G. Martin. Illustrated account of the restoration work in the plant of the Platt Iron Works. 2000 w. Ir Age—May 8, 1913. No. 41906 C.

Legal Specifications for Illuminating Gas. E. B. Rosa and R. S. McBride. Gives results of experimental study of the subject of technical specifications for the quality of gas and gas service. 31

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Vacuum Cleaning

pp. Tech Papers of Bureau of Stand-No. 14. No. 43335 N.

Determination of Sulphur in Illuminat-R. S. McBride and E. R. ing Gas. Describes the apparatus and methods employed, giving experiments, and recommendations as to form and operation of apparatus, and determination of sulphate in the solutions. 46 pp. Tech Papers of U S Bureau of Stand, No. 20—March 7, 1913. No. 45159 N.

Guns

The Lewis Automatic Machine-Gun. G. H. Powell. Illustrated description of a gas-operated mechanism with explanation of its working. 2500 w. Engng-Nov. 8, 1912. No. 37640 A.

Ordnance Manufacture at South Beth-E. G. Grace. Read before the Am. Ir. & St. Inst. Describes methods employed with 12-inch guns, armor riercing projectiles and hard-faced armor plate. 3000 w. Ir Age—Oct. 31, 1912. No. 37745 C.

Ordnance Manufacture at the Bethlehem Works. E. G. Grace. Explains how heavy artillery, projectiles, and armor plate are made, with details of the tests and descriptions of the machines. 3000 w. Ir Trd Rev—Oct. 31, 1912. No. 37182.

An American Small-Arms Plant in Australia. Brief illustrated account of a plant for manufacturing military rifles. American machine tools are in use. w. Sci Am—Dec. 14, 1912. No. 38158.

Manufacturing Guns in the Iver Johnson Shop. Ethan Viall. Illustrated detailed description of how gun barrels are made from the solid bar. 1000 w. Am Mach—Feb. 20, 1913. No. 39901.

The Birth of a Rifle. Describes the work at the Commonwealth Small Arms Factory at Lithgow, N. S. W. 2590 w. Aust Min Stand — Dec. 19, 1913. No. 39764 B.

Mechanical and Physiological Studies on the Work of Filers (Recherches mécaniques et physiologiques sur le travail du limeur). Jules Amar. Analysis of the work; muscular effort; unfavorable influences of the work; rest periods, and individual variations. Ills. 10,000 w. Rev de Metall—July, 1913. No. 43559 E+F.

Photography

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Plumbing

Plumbing in a Cincinnati Bath House. Illustrates and describes an interesting Installation of shower, plunge and other fixtures. 2000 w. Met Work—March 21, 1913. No. 40763.

Printing

The Rotogravure Quick-Printing Process and Its Possibilties. Illustrates the rotogravure machine for the rapid reproduction of topical and other subjects by the photogravure press, explaining its advantages. 2500 w. Sci Am Sup—April 19, 1913. No. 41331.

Printing Machinery

The Government Printing Office at The Hague (De Landsdrukkerij te 's-Graven-hage). Description of new buildings by D. E. C. Knuttel, and description of mechanical installations by I. P. de Vooys. Ills. 4500 w. De Ingenieur—Feb. 1, 1913. No. 40578 D.

The Development of the Printing Press (De ontwikkeling van de drukpers). I. P. de Vooys. Historical review of progress in the last two centuries. Ills. 9000 w. De Ingenieur —March 1, 1913. No. 40580 D.

See also Tools, under Machine Works and Foundries.

Slings

Knots and Slings. F. R. Parsons. Il lustrated explanation of the right and wrong way of tieing knots, hitches and bindings. 1200 w. Prac Engr—Dec. 19, 1912. No. 38869 A.

Standards

Discussion on Report of the Committee on Standard Cross-Sections and Symbols. Ills. 2000 w. Jour Am Soc of Mech Engrs—April, 1913. No. 41293 D.

Tabulating Machine
The Hollerith Tabulating Machine in the Business Office. S. G. Koon. Describes a rapid means of compiling and tabulating statistics. 1200 w. Mach. N Y-Sept., 1913. No. 44842 C.

Technical Terms

The Revision and Standardization of English Technical Terms. D. M. Wright. Urges the appointment of a committee to carry on this work. 2000 w. Bul Soc for Pro of Engng Ed-June, 1913. 44827 N.

Vacuum Cleaning

Vacuum Cleaning. Maxwell S. Cooley. Discusses the requirements of an ideal vacuum cleaning system. 1000 w. Heat & Vent Mag-Dec., 1912. Serial. part. No. 38650.

Tests of Vacuum Cleaning Systems. J. R. McColl. Gives an outline of tests

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Weighing Machines

made for the Board of Education, Detroit, Mich. Curves and tabulated data. Ills. 4000 w. Jour Am Soc of Mech Engrs-Sept., 1913. No. 45417 D.

Vacuum Evaporators

Heat Transmission and Entrainment in Vacuum Evaporators. An account of a series of tests by Prof. E. W. Kerr, in which the effect of various elements was analyzed. Ills. 5000 w. Met & Chem Engng—June, 1913. No. 42608 C. Weaving Machinery

Automatic Weaving Machinery. Edi-

torial on conditions in Lancashire and on the automatic looms and other devices now available and the possibility of adopting such mechanisms. Ills. 2000 w. Engng—May 9, 1913. No. 42290 A.

Weighing Machines
The "Aequitas" Automatic Weighing
Machine (Système de bascule automatique "Aequitas"). Léon Masson. A steelyard in which the sliding counterweight in automatically operated. Ills. 2000 w. Bull Soc d'Encour-April, 1913. No. 42184 E. + F.

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Accidents

COAL AND COKE

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Accidents

Accidents from Falls of Roof and Coal. George S. Rice. Discusses causes and 5000 w. U S Bureau of prevention. Mines-Miner's Circ. 9. No. 37675 N.

Coal Mine Accidents in the United States, 1896-1912, with Monthly Statistics for 1912. Compiled by Frederick W. Horton. 74 pp. U. S. Bureau of Mines—Tech Paper 48. No. 41698 N.
Prevention of Accidents in Coal Mines

John McNeil. Abstract of a paper read before the Rocky Mt. Coal Min. Inst., in which the blasting of the solid and legislation requiring payment on the runof-mine basis is condemned. 3000 w. Coal Age—July 12, 1913. No. 43673.

Non-fatal Injuries in Bituminous Mines. F. L. Hoffman. Gives statistics of interest. 2500 w. Coal Age-Aug. 9, 1913. No. 44235.

Rufford Colliery Accident. From Mr. Walker's report on the causes of and circumstances attending the accident at Nottinghamshire on Feb. 7, 1913, from a water barrel falling down a sinking shaft. Ills. 3500 w. Col Guard—Oct. 17, 1913. No. 46235 A.

Alabama

Alabama Coal Operators' Association. William Z. Price. An account of the proceedings of the fifth annual session, with abstracts of the papers. Ills. 4500 w. Col Engr—Sept., 1913. No. 44847 C.

A Brief Account of the Matanuska eld. W. R. Crane. Maps and illus-Field. trated description of this coal region in

Alaska. 1200 w. Coal Age-April 26,

1913. No. 41546.

A "Day in Court" for the Alaska Coal Claimants. Maurice D. Leehey. A plea for justice for honest coal claimants in Alaska. 4000 w. Pro Am Min Cong— 1912. No. 46181 N.

Government Construction of Railroads and Leasing of Coal Lands. Falcon Joslin. A discussion of conditions and needs

In Alaska. 8500 w. Pro Am Min Cong -1912. No. 46180 N .

The Jasper Park Collieries. Illustrated description of new collieries in Alberta. 2500 w. Can Min Jour-Nov. 1, No. 37279.

The Burus Anthracite Mines, Sheep Creek. Sketches and report of an important property in Alberta. 1500 w. Can Min Jour—Dec. 15, 1912. No. 38354.

Analysis

Commercial Sampling of Coal. C. E. Considers precautions necessary that the sample may accurately represent the lot when selling by analyses. 3500 w. Mines & Min-Nov., 1912. No. 37187 C.

The Kaiser Wilhelm Institute at Mülheim-Ruhr for Coal Research (Das Kaiser-Wilhelm-Institut für Kohlenforschung zu Mülheim-Ruhr). The opening exercises, and the address by Dr. Emil Fischer. 4500 w. Glückauf—Nov. 16, 1912. No. 38419 D.

The Determination of Water in Coal. G. N. Huntley and J. H. Coste. Abstract of a paper read before the London Sec. of the Soc. of Chem. Ind. Considers the direct methods, gasometric, and indirect methods, and the conditions affecting them. 1600 w. Col Guard—Jan. 24, 1913. Serial, 1st part. No. 39791 A.

Coal Analysis and the Determination of Calorific Value (Ueber Kohlenanalysen und Heizwertbestimmungen). Wencélius. Comparative results obtained by the use of the Mahler calorimeter and the formulas of Dulong and Goutal. Discussion. 2800 w. Stahl u Eisen—Jan. 2, 1913. No. 40002 D.

The Study of Coal and Carbon Residues Czur Kenntnis der Kohlen und Verkohlungsrückstande). Ed Donath and Er. Braünlich. Analytical studies of coal content. 4000 w. Oest Zeit f Berg u Hütten—Feb. 22, 1913. No. 40510 D.

Bituminous

Heat in the Volatile Matter of Coal. Alfred M. Peter. Abstract of a paper read before the Kentucky Min. Inst. Estimates the heat of combustion of the volatile matter in coal from that of the fixed carbon, using analyses of coals from Kentucky. 2500 w. Coal Age — May 31, tucky. 2500 w. 1913. No. 42625.

The Determination of Water in Coal. P. Litherland Teed. Shows that the method now employed for determining the percentage of moisture in a fuel is inaccurate, and describes an accurate and rapid process. 2500 w. Inst of Min & Met, Bul 104—May 15, 1913. No. 43155 N.

Procedure and results in Testing Fuels (Verfahren und Ergebnisse der Prüfung von Brennstoffen). F. W. Hinrichsen and S. Taczak. This first part discusses the several phases in conducting chemical tests of coal. Serial. 1st part. 4200 w. Glückauf—May 17, 1913. No. 43007 D.

Preliminary Report for the Committee on Coal Analysis of the American So-ciety for Testing Materials and the American Chemical Society. W. A. Noyes. An account of work of sub-com-Chem Engr-July. 4500 w. mittees. No. 43856 C. **1913**.

The Earning Power of Chemistry in the Coal Mining Industry. Edmund M. Chance. Shows the economies possible in purchase of materials and sale of products. 2000 w. Col Engr—July, 1913. No. 43410 C.

Coal for Power Plants. G. Basil Barham. Discusses the differences in coals and the simple analysis necessary to determine the quality. 1500 w. Lond—Aug. 15, 1913. No. 44732 A. Engr.

The Microscopical Examination of Coal in an Impinging Light (Die mikroskopische Untersuchung der Kohle im auffallenden Licht). H. Winter. The analysis of coal values by this method. 5000 w. Glückauf—Aug. 30, 1913. No. 45396 D.

Analysis of Coals in the United States with Descriptions of Mine and Field Samples Collected Between July 1, 1904, and June 30, 1910. N. W. Lord, with chapters by J. A. Holmes, F. M. Stanton, A. C. Fieldner, and Samuel Sanford. Part I, 321 pp. Part II. 1200 pp. U. S. Bureau of Mines. Bul. 22. No. 45963 N. Anthracite

Facts About Anthracite Mining. W. Parker. Brief history of the growth of the industry showing increased econo-

my in production. 2000 w. Mines & Min—Nov., 1912. No. 37188 C.
Geology, Mining and Preparation of Anthracite. H. H. Stoek. An illustrated review of the field in northeastern Pennsylvania and Preparation of the field in northeastern Pennsylvania. sylvania, with general discussion. 5500

Jour W Soc of Engra-Oct., 1912. No. 37738 D.

Chemical Interpolation of Anthracite. M. S. Hachita. Gives a method of rapid-

ly determining the composition. 1200 w. Mines & Min—Feb., 1913. No. 39625 C.
The Economical Use of Anthracite.
Reginald Trautschold. Analysis of the various costs of different grades of anthracite coal and a study of the economies to be effected by using mixtures. w. Coal Age-July 19, 1913. No. 43814.

Mining Low Seams of Anthracite. Hugh Archbald. Discusses methods and difficulties of working thin seams with particular reference to the adaptability of machines Ills. 2000 w. Coal Age—Oct. 25, 1913. No. 46189.

Artificial Coal

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—Aug. 22, 1913. No. 44922 A.

Austria

Lignite Deposits in Northwestern Bohemia between Brüx and Dux (Die Lagerungs-verhältnisse im nordwestböhmischen Braunkohlenbecken zwischen Brüx und Dux). A. Fleck. Description of geological conditions of the region. Ills. 3850 w. Glückauf—Oct. 12, 1912. No. 37409 D.

The Rositz-Zbeschau-Oslawan Coal Dis-(Das Rossitz-Zbeschau-Oslawaner Steinkohlenrevier). Otto Braun. A revew of mining practice, discussing geology, and deposits. Ills. Serial. 1st part. 1800 w. Oest Zeit f Berg u Hüt.

tenwesen—Nov. 2, 1912. No. 38412 D.
The Economic Utilization of Natural Fuels in Austria (Ueber die wirtschaftlichere Ausnützung der natürlichen Brennstoffe in Oesterreich). Ed. Donath. The consumption of anthracite and bituminous coal, peat, petroleum and wood. Serial. 1st part. 3500 w. Oest Zeit f Berg u Hütten — March 29, 1913. No. 414Ž3 D.

Benzol

Benzol—How it is Recovered from Coal Gas. Franz Puning. Describes what is being done abroad in the recovery of this by-product. Ills. 6000 w. Ir Trd Rev—Oct. 9, 1913. No. 45783.

Bituminous

The Low Temperatures Modification of Bituminous Coals to Form a Smokeless Domestic Fuel. Presents results of recent studies at the University of Illinois, by Profs. Parr and Olin. showing that it is feasible to make a dense coke. Also

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Coal Dust

editorial. Ills. 2500 w. Dec. 26, 1912. No. 38590. Eng News-

Changes in the Bituminous Coal Industry in 1912. George H. Cushing. Reviews changes and conditions explaining

the tendency to solidification. 1500 w.
Min & Sci Pr—Jan. 4, 1913. No. 38929 C.
Does Bituminous Mining Pay? A. E.
Rickards. Presents facts and figures covering coal production and discusses the opportunity for economy. Ills. 3000 w. Coal Age—Sept. 29, 1913. No. 45247.

Bore Holes

Ten Deep Borings in East Kent. Malcolm Burr. Brief description and outline section of ten holes recently put down. 5000 w. Col Guard—Oct. 10, 1913. No. 45981 A.

Briquettes

Briquetting Coal. A description of the Shedlock system and apparatus as used in England. Ills. 2500 w. Col Engr-July, 1913. No. 43409 C.

Briquetting

Coal Washing and Briquetting. Brief illustrated description of the Alstaden Mine, Germany. 2000 w. Mines & Min

—Nov., 1912. No. 37186 C.

Innovations in the Practice of Drying and Briquetting Solid Fuels (Neuerungen

auf dem Gebiete der Trocknung und Brikettierung fester Brennstoffe). Herr Jordan. Describes late improvements. Ills. 2500 w. Feuerungstechnik-Jan. 1, 1913. No. 40023 D.

Canada

The Production of Coal and Coke in Canada During the Calendar Year 1911. John McLeish. Advance chapter of the annual report on the mineral production of Canada. 10000 w. Can Dept of Mines -No. 200. No. 39537 N.

Notes on the Progress of Development Work in Coal Areas of Alberta and Sas-katchewan. D. B. Dowling. Considers the coal areas on the Grand Trunk Pa-cific Ry. 2500 w. Jour Can Min Inst— Vol. XV. No. 42050 N.

The Undeveloped Coal Resources of Canada. D. B. Dowling. A review of the area and probable coal content of the various coalfields of Canada. 5000 w. Jour Can Min Inst-Vol. XIV. 42031 N.

Charcoal

Charcoal and Its Value in Brass and Bronze Melting, Its Manufacture and Method of Using. Ills. 2200 w. Brass Wld-July, 1913. No. 43740.

Coal and Iron in China (Kohle und Eisen in China). Friedrich Lux. A brief geological sketch of the country, describing the known appearances of these minerals. Ills. Serial. 1st part. 3800 w. Stahl u Eisen — April 3, 1913. No. 41410 D.

The Coal Industry in North China. Noah T. Williams. Abstract of a paper read before the Manchester Geol. & Min. Soc. Information concerning the Shansi coalfield, mining methods, transport, labor, etc. 5000 w. Ir & Coal Trds Rev—May 9, 1913. No. 42296 A.

Classification

Classification of Coals. J. M. Gordon. Discusses various classifications and their limitations. 2500 w. Can Min Jour-Aug. 15, 1913. No. 44492.

Cleaning

Methods and Machines for Cleaning Coal. A. Langerfeld. Describes different methods used, and gives detailed description of the Langerfeld separator and recent improvements. Ills. 4000 w. Coal Age—May 3, 1913. No. 41888.

Coal-Cutters

Installation and Manipulation of Coal-Cutters. J. McCann. Read before the Assn. of Min. Elec. Engrs. Considers the system of supply, transmission, distribu-tion, etc. Ills. 2000 w. Ir & Coal Trds Rev—April 4, 1913. No. 41251 A. Machine Mining in Anthracite Mines.

Hugh Archbald. Illustrates and describes methods of cutting and handling the coal that renders it possible to work thin seams profitably. 4000 w. Col Engr —April, 1913. No. 40971 C.

A Coal Cutter with Saw and Auger Raleigh C. Taylor. Illus-Movement. trated description of a new mining machine in which the bits are arranged spirally on a cone-shaped cutter. 2000

w. Coal Age—July 5, 1913. No. 43445.
Coal Mining Machines. Wilbert A.
Miller. Reviews early coal cutters and
their development, with special reference to the use of the Shortwall machines. 2500 w. Ills. Col Engr-Sept., 1913. No. 44849 C.

Coal Dust

Robbing Coal Dust of Its Dangers. Sim Reynolds. States experience in applying steam to the air current and its effect upon the dust in the mine. 3300 w.

Mines & Min—Jan., 1913. No. 38711 C. Electrical Devices for Measuring the Inflammabilty of Coal Dust. Information from the report of the Explosions in Mines Committee describing methods of investigation and apparatus used. Ills. 1000 w. Elec Rev, Lond—Jan. 24, 1913. No. 39772 A.

Coal Dust and Its Uses. J. Drummond Paton. Abstract of paper read before the Manchester Geol. & Min. Soc. Gives

Coal Fields

suggestions for its profitable utilization. 4500 w. Col Guard-April 11, 1913. No. 41387 A.

The Combustion of Oxygen and Coal Dust. W. C. Blackett. Address before the N. of England Inst. of Min. & Mech. Engrs. Explains the action of oxygen, the causes, preventives, etc. General discussion. 6800 w. Col Guard—April

The Slow Combustion of Coal Dust and Its Thermal Value. F. E. E. Lamplough and A. Muriel Hill. Read before the Inst. of Min. Engrs. Describes investigation. tions to determine the nature of the chemical changes involved in the slow combustion of coal dust and the value of the heat changes accompanying the oxidation. 4000 w. Ir & Coal Trds Rev—June 6, 1913. No. 42897 A.

First Series of Coal Dust Explosion

Tests in the Experimental Mine. George S. Rice, L. M. Jones, J. K. Clement and W. L. Egy. A description of the mine and equipment and an account of the object sought in its establishment, with record of first series of coal-dust tests. Ills. 113 pp. U S Bureau of Mines—Bul. 56. No. 43999 N.

Development of Coal Dust Explosions. The fourth report of the explosions in mines committee. 7000 w. Col Guard—

June 20, 1913. No. 43384 A.
The French Coal Dust Experiments. formation from the last annual report concerning recent work. 2000 w. Guard-July 18, 1913. No. 43962 A.

How to Handle a Dry or Dusty Mine. David Victor. Gives recommendations for safety. 2500 w. Col Engr—Sept., 1918. No. 44853 C.

A Laboratory Study of the Inflamma-bility of Coal Dust. J. C. W. Frazer, E. J. Hoffman and L. A. Scholl, Jr. Describes investigations made to find a reliable laboratory method for obtaining a classification of the dusts occurring in mines. 60 pp. U. S. Bureau of Mines—Bul 50—No. 46110 N.

The Influence of the Presence of Gas Upon the Inflammability of Coal Dust in Air. W. M. Thornton. An investigation of the influence of gas in coal-dust ignition. 2000 w. Col Guard-Sept. 19,

1913. No. 45567 A.

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Coalfields

A Boring for Coal at Claverly, near Bridgeworth, and Its Bearing on the Extension Westwards of the South Staffordshire Coalfield. Dr. Walcot Gibson. Abstract of a paper read before the S. Staffordshire & Warwickshire Inst. of Min. Engrs. Describes the experimental boring and what it shows. Discussion. 4000 w. Ir & Coal Trds Rev—Feb. 21, 1918. No. 40321 A.

The Geology and Palaeontology of the Warwickshire Coalfield. Robert Douglass Vernon. Abstract of a paper read before the Geol. Soc. of London. A report of re-search work to determine the true age of the permian rocks of Warwickshire and their relationship to the carboniferous rocks, etc. 3500 w. Col Guard—March

28, 1913. Serial. 1st part. No. 41140 A.
Oil and Gas Wells Through Workable Coal Beds. George S. Rice. O. P. Hood and others. Papers discussing troubles due to proximity of gas and oil wells to coal fields. Ills. 101 pp. U S Bureau of Mines—Bul 65. No. 41215 N.

Coal Area of South as Compared with

Europe. Edward W. Parker. Discusses the production and possibilties of the South's coal fields. 2000 w. Mfrs' Rec.—March 27, 1913. (Special.) No. 41553 N. The Concealed Coalfield of Yorkshire

and Nottinghamshire. Walcot Gibson. From a Memoir of the Geol. Survey, England and Wales. General description, with map. 2500 w. Col Guard—June 13, 1913. Serial. 1st part. No. 43143 A.

Tertiary Coal Fields of the Rio Grande. B. L. Miller. Illustrates and describes deposits in Webb County, Texas. 2500 w. Coal Age—Aug. 23, 1913. No. 44580.

The Coal Fields of Western Canada. Arthur Lakes. Describes their location, extent, geology, probable quantity, &c. Map. 2500 w. Col Engr—Aug., 1913. Map. No. 44118 C.

The McAlester Coal Field in Okla-George M. Brown. Illustrated description of this district, which yields the highest grade fuel west of the Mississippi. 1500 w. Coal Age-Aug. 2, 1913. No. 44143.

The Matanuska River Coal Field by Districts. W. R. Crane. Illustrated description of this coal field in Alaska. 2500 w. Coal Age-Aug. 2, 1913. No. 44142.

The Ipswich Coalfield. Walter E. Cameron. Map and description of the geology of the region. 2500 w. Queens Gov Min Jour-Aug. 15, 1913. 45173 B.

The Development of the Midland Coalfields. Fred. G. Meachem. Read before the British Assn. Reviews the history of the development. 2500 w. Col Guard— Sept. 19, 1913. No. 45565 A. Crow's Nest Pass Coal Fields. W. W.

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COAL AND COKE

Coal Tar

9. prepared by the Geol. Survey of Canada. Describes briefly the various mines. 3000 w. Can Min Jour Oct 1 1012 No. 45692.

Coal Formation

Production of Coal from Cellulose at High Temperatures and Pressures. Dr. F. Bergius. From a paper read before the London Sec. of the Soc. of Chem. Ind. An account of laboratory experiments on the formation of coal. 1800 w. Ir & Coal Trds Rev—May 13, 1913. No. 42792 A.

Coal Gases The Comparative Inflammability of Mixtures of Pit Gas and Air by Momentary Electric Arcs. W. M. Thornton. Abstract of a paper read before the N. of England Inst. of Min. & Mech. Engrs. An examination of the inflammability of samples of pit gas. 2000 w. Ir & Coal Trds Rev—Aug. 8, 1913. No. 44466 A.

The Influences of Inert Gases on Inflammable Gaseous Mixtures. J. K. Clement. A report of experiments made to determine the range of explosibility of mixtures of methane or natural gas with oxygen, carbon dioxide, and nitrogen. Ills. 24 pp. U. S. Bureau of Mines— Tech paper 43. No. 46109 N.

Coal Handling

A Modern Distribution and Storing ant. Alfred Gradenwitz. Illustrated Plant. description of an electric telpher line in Germany. 1000 w. Coal Age—Sept. 13, 1913. No. 45112.

See Coal Handling, Conveyors, and Ore Handling, under MECHANICAL ENGINEER-ING, Transporting and Conveying.

Coal Mining

Working Inclined an Coal Bed. George Watkin Evans. Describes a method of working a pitching seam at Coal Creek mine, New Castle, Washington. Ills. 2500 w. Col Engr—Aug., 1913. No. 44119 C.

Coal Mining in the United States, with Special Reference to the Treatment of Coal Dust, and Haulage by Electric Loco-Samuel Dean. Abstract of paper read before the N. of England Min. & Mech. Engrs. Explains methods of working, dust-explosion phenomena, &c. 3000 w. Ir & Coal Trds Rev—Aug. 8, 1913. No. 44467 A.

Coal Preparation

Preparation of a Domestic Coal. J. D. Rogers. Methods of avoiding breakage and securing accurate sizing are discussed. Ills. 2000 w. Col Engr—March, 1913. No. 40275 C.

The Trifail Coal Dressing Plant (Ueber die Kohlenaufbereitungsanlage Trifail). Wilhelm Seltner. Details of the construction and operation of this Austrian plant. Plates. Serial. 1st part. 1400 w. Oest Zeit f Berg u Hütten-May 10, 1913. No. 43016 D.

Coal Purchasing

Model Specifications and Conditions of Contract for the Purchase of Coal. A copy of the model agreed upon in London in connection with guaranteed coals. 3000 w. Col Guard — April 4, 1913. 41238 A.

Sampling Coal Deliveries and Types of Government Specifications for the Purchase of Coal. George S. Pape. Explains the theory and method of sampling as a part of coal specifications, with related in-formation. Ills. 66 pp. U S Bureau of

formation. Ills. 66 pn. U S Mines—Bul 63. No. 41583 N.
Economy in Purchasing and Using Coal. A. O. Doane. Arguments favoring the control of cost through purchase by Engineering 4000 w. specifications. 4000 w. Engineer Magazine—May, 1913. No. 42492 B.

The Purchase of Coal Under Specification. J. A. Capp. Discusses the need of purchasing under specification and means of obtaining a representative sample, etc. 4000 w. Gen Elec Rev—July, 1913. No. 43329 C.

Purchasing Coal under Specifications. George S. Pope. Abstract of paper read before the Nat. Assn. of Cotton Mfrs. Gives a summary of the advantages, discussing the award of contracts, government specifications, and sampling. 2500 w. Power—Oct. 28, 1913. No. 2500 w. 46215.

Coal Stacking

Coal Stacking and Coal Firing. From a paper by H. Kendrick, read before the Manchester Dist. Inst. of Gas Engrs. Deals with the effect of stacking on the physical condition of coal, the dangers, and precautions. 5000 w. Ir & Coal Trds Rev-Jan. 10, 1913. No. 39276 A.

Coal Storage

Storage of Coal Under Water. R. G. Hall. Describes a scheme worked out for storing coal for zinc smelting. Ills. 2000 w. Min & Sci Pr—March 15, 1913. No. 40722.

Storing and Rehandling Anthracite Under Cover. Wm. E. Hamilton. Gives plan, elevations and description of system of coal storage. 1200 w. Col Engr -April, 1913. No. 40977 C.

The Oxidation and Deterioration of Coal. Alvin J. Cox. An investigation of the changes which take place when coal is exposed to the air. 4500 w. Philippine Jour of Sci-Oct., 1912. 41705 N.

Coal Tar

Procedure in the analysis of Steel-Works Coal Tar (Ueber die Verfahren zur Untersuchung des Stahlwerksteeres). R. Weissgerber. The important steps to be

COAL AND COKE

Coke-Oven Practice

followed in the preliminary examination of coking coals. 3000 w. Stahl u Eisen Feb. 20, 1918. No. 40508 D.

The Application of Coal-Tar Oils in Foundry Practice (Die Verwendung des Steinkohlenteeröls im Giessereibetriebe). Herr Hausenfelder. The first paper discusses methods of extraction of coal-tar and its oils. Ills. Serial, 1st part. 1500 w. Giess Zeit—Oct. 1, 1913. No. 46025 D.

Coal Trade

The Panama Canal and the Coal Trade. Discusses the coaling facilities at the canal, the influence of the canal on the American and British coal markets, and Australia. 3500 w. Col Guard—May 9, 1913. No. 42285 A.

Coke

The Manufacture of Coke. William Hutton Blauvelt. Explains the coking process and gives information concerning the bee-hive and by-product ovenplants, methods, and matters related. 6500 w. Bul Am Inst of Min Engrs—Nov., 1912. No. 37892 F.

The Manufacture of Coke. F. E. Lucas. Deals mainly with by-product ovens, with observations on plants in Europe and America. 4500 w. Bul Am Inst of Min Engrs—Nov., 1912. No. 37893 F.

The Manufacture of Coke. Discussion of the papers of William H. Blauvelt, F. E. Lucas and C. W. Andrews, presented at the Cleveland meeting, Oct., 1912. 5500 w. Bul Am Inst of Min Engrs—Jan., 1913. No. 39453 F.

Recent Experiments on the Hardness of Coke (Neuere Untersuchungen über die Härte des Kokses). Oskar Simmersbach. Tabulated results and method of obtaining same. Discussion. 5600 w. Stahl u Eisen—March 27, 1913. No. 41409 D.

The Manufacture of Coke in Belgium. Baron Evence Coppée. Read before the Iron & Steel Inst. Reviews the development of the Coppée oven, and discusses by-product-ovens, waste heat and regenerative ovens, processes in use, and related matters. Ills. 6000 w. Ir & Coal Trds Rev—Sept. 5, 1913. No. 45196 A.

Coke Handling

Mechanical Coke Quenching and Loading Apparatus at the Neumühl Mines (Maschinelle Kokslösch-und-verladeeinrichtung der Zeche Neumühl). Herr Braunsteiner. Details of the construction and operation of the apparatus. Ills. 2200 w. Glückauf—April 26, 1913. No. 42119 D.

Coke-Oven Gas

Cleaning Coke-Oven Gas. Sydney F. Walker. Describes method of condensing and separating by-products. Ills. 1200

w. Mines & Min — Feb., 1913. No. 39621 C.

Coke-Oven Gas, Utilization and Applications (Les Gaz de fours à coke, leur utilisation leurs applications). A. Goury History, power, production; use in metallurgical furnaces, street lighting, production of nitrogen, artificial rubber, etc. Ills. 16000 w. Mem Soc Ing Civ de France—Dec., 1912. No. 40075 G.

The Decomposition Temperature of Coke-Oven Gas (Ueber die Zersetzungs-

The Decomposition Temperature of Coke-Oven Gas (Ueber die Zersetzungstemperatur von koksofengas). Oskar Simmersbach. Analytical studies. 4500 w. Stahl u Eisen—Feb. 6, 1913. No. 40505 D.

The Use of Coke-Oven Gas in an Unheated state for Steel Manufacture (Ueber die Verwendung von koksofengas in unvorgewärmten Zustande zur Stahlerzeugung). Oskar Simmersbach. The practice in use at several European and American plants, and adaptation of Siemens-Martin furnace. Ills. 2100 w. Stahl u Eisen — Feb. 13, 1913. No. 40501 D.

The Decomposition of Coke-Oven Gas and Its Employment in the Unheated Condition in Steel-Making. O. Simmersbach, in Stahl und Eisen. Describes the two principal methods suitable for the application of surplus coke-oven gas in the open-hearth furnace. 2500 w. Ir & Coal Trds Rev—July 18, 1913. No. 44042 A.

The Development of the Coke-Oven Gas Fan (Die Entwicklung der Kokereigassauger). A. Thau. A study of the lines of development since the early designs of Biele in 1848. Ills. 4200 w. Glückauf—June 7, 1913. No. 43512 D.

Direct Recovery of Tar and Ammonia

Direct Recovery of Tar and Ammonia from Coke-Oven Gas by the Still Process. Diagram and description of the still recovery plant at the Concordia Colliery. Oberhausen, Germany. 1000 w. Col Guard—July 25, 1912. No. 44180 A.

The Use of Stills for the Direct Extraction of Tar and Ammonia from Coke-Oven Gas (Das Verfahren von Still zur direkten Gewinnung des Teers und Ammoniaks aus Koksofengasen). F. Korten. The operation and design of the still used in the Otto direct process. Ills. 1700 w. Glückauf—July 12, 1913. No. 44615 D.

See Blast-Furnace Gas and Open-Hearth Furnaces, under *Iron and Steel*, and Gas Firing, under MECHANICAL EN-GINEERING, Steam Engineering.

Coke-Oven Practice

Laboratory Work on By-Product Coke-Oven Plants. Gives details of tests which are frequently required, dealing

Coke Ovens

COAL AND COKE

Coking By-Products

only with methods of proved efficiency. 2000 w. Gas Wld—Oct. 4, 1913. Serial, 1st part. No. 45833 A.

The Filtration of Raw Gases in Coke-Oven Practice (Ueber das Absaugen der Rohgase bei dem Koksofenbetrieb). E. Jenkner. Discusses the attending action, with outline of model arrangements. Ills. 2000 w. Stahl u Eisen—Jan 23, 1913. No. 40007 D.

Coke Ovens

Types of Coke Oven Plants as Seen in Operation. Illustrates and describes the Coppee coal washing, coking and byproduct plant at Holmwood Colliery in the present article. 2500 w. Gas Wld—March 1, 1913. Serial. 1st part. No. 40458 A.

Progress in By-Product Recovery at Coke Ovens. J. E. Christopher. Abstract of paper and discussion before the Manchester Sec. of the Soc. of Chem. Ind. Briefly considers the semi-direct and the direct processes, with related matters. 3000 w. Ir & Coal Trds Rev—Feb. 28, 1913. No. 40496 A.

The Available Energy in Coke Ovens for Recovering By-Products Without the Regeneration of Heat (L'énergie disponible dans les fours a coke a récupération de sous-produits sans régénération de chaleur). Eugéne Lecocq. The qualifications required for such ovens, designs, and proof. Ills. 10000 w. Rev de Metall

and proof. Ills. 10000 w. Rev de Metall
—March, 1913. No. 40591 H.

The Coke-Oven Plant of the Indiana
Steel Co. in Gary (Die Koksofenanlage
der Indiana Steel Co. in Gary). H.
Groeck. Illustrated description of this
plant. Serial. 1st part. 2700 w. Zeit des
Ver deutscher Ing — Feb. 8, 1913. No.
40536 D.

Heating Coke Ovens by Producer Gas and Blast-Furnace Gas (Le chauffage des fours à coke aux gaz de gazogènes et de hauts-fourneaux). Eugene Lecocq. The heat to be attained and methods of procedure by either process. Diagrams and tables. 18500 w. Rev de Metal—April, 1913. No. 41515 H.

The Modern By-Product Coke-Oven. C.

A. Meissner. Extracts from a paper read before the Am. Ir. & St. Inst. Discusses the advantages, quality of product, and details of construction of the types best known in the United States. Ills. 7500 w. Ir Age—May 29, 1913. Serial. 1st part. No. 42558 C.

Coppée By-Product Coke-Oven Installation at Lancaster's Stam Coal Collision of Control of the Company C

Coppée By-Product Coke-Oven Installation at Lancaster's Steam Coal Collieries, Cwmtillery. Illustrated description of the washery, coke ovens and by-product plant. 2500 w. Ir & Coal Trds Rev—June 27, 1913. No. 43650 A.

The Production of Coke in Koppers Ovens at English Collieries. Illustrated description of by-product plants in the Cumberland district of England. 2500 w. Ir Trd Rev—July 24, 1913. No. 43865.

Recent Improvements in the Manufacture of Coke (Nouveaux perfectionnements dans la fabrication du coke). Henry Thiry. Description of new furnace types and their operation. Ills. 3200 w. Rev de Metall—July, 1913. No. 43558 E + F.

Coke Plants

See Cost Methods, under INDUSTRIAL ECONOMY.

Coking

Coking the Semi-Bituminous Johnstown Coals. John W. Gocher. An account of the trouble because they swell so freely on coking. Ills. 2500 w. Coal Age—June 14, 1913. No. 42836.

The Pishel Coking Test. Max A. Pish-

The Pishel Coking Test. Max A. Pishel. Describes a method of determining the coking or non-coking quality of a coal by its adherence to the mortar when pulverized. Ills. 3500 w. Col Engr—July 1913 No. 43407 C.

July, 1913. No. 43407 C.

Peat Coking (Ueber Torfverkokung).

A. Wihtol. Selection of the peat, the coking process, and by-products. Ills. 2500 w. Feuerungs—Sept. 1, 1913. No. 46063 D.

Coking Appliances

Ammonia Distilling Appliances in Tar Coking (Ammoniakdestillierapparate auf Teerkokereien). A. Thau. A general review of the different types of apparatus used. Ills. Serial, 1st part. 3500 w. Gluckauf—Jan. 18, 1913. No. 40013 D.

Coking By-Products

Washing, Coking and By-Product Recovery Plant at the Old Silkstone Collieries. Illustrated detailed description. Plate. 3000 w. Ir & Coal Trds Rev—Oct. 25, 1912. No. 37295 A.

By-Product Coke. C. W. Andrews. Discusses the growth and probable future of the by-product coke industry. 1200 w. Bul Am Inst of Min Engrs—Jan., 1913. No. 39445 F.

Coking and By-Product Plant at Clifton Colliery, Cumberland. Information concerning the development of the regenerative oven in Cumberland, and illustrated description of the plant at the Clifton Colliery. 1800 w. Ir & Coal Trds Rev—Jan. 17, 1913. No. 39489 A.

Rev—Jan. 17. 1913. No. 39489 A.

Mechanical Coke Quencher. W. Reubold. Illustrated description of a new quenching device by the process of immersion. 2000 w. Ir & Coal Trds Rev—Feb. 28, 1913. No. 40494 A.

Beehive and By-Product Coke in Alabama. H. S. Geismer and David Han-

Collieries

cock. A statement of the quality and quantity of coke produced in Alabama and

the coal from which it is made. Ills. 1800
w. Coal Age—June 7, 1913. No. 42692.
Improving Coke from Beehive Ovens.
Newell G. Alford. Suggestions for investigating the causes for the variation in quality of the product. 2000 w. Coal Age—June 7, 1913. No. 42693. Progress in the Process of By-Product

Extraction (Fortschritte auf dem Gebiete der Nebenproduktengewinnung). Dr. Runkel. Discusses recent improvements. 2800 w. Glückauf—Nov. 9, 1912. No. 38416 D.

A By-Product Plant for Foundry Coke. Illustrated description of new Koppers oven installation at Joliet, Ill. 3000 w. Ir Trd Rev-Jan. 2, 1913. (Special.) No. 38737 D.

Recovery of By-Products in Coke Manufacture. W. E. Hartman. Discusses the application of coke oven gas as fuel for heating furnaces, and considers the value of other by-products. 2500 w. Ir Trd Rev—April 3, 1913. No. 41062.

Ammonia from the Available Nitrogen in Coal (Ueber die Nutzbarmachung des stickstoffs der Kohle in Form von Ammoniak). W. Heckel. Studies on the available nitrogen content, with outline of extraction methods. 2000 w. Glückauf—March 8, 1913. No. 41414 D.

The Advantages of Direct Ammonia Extraction Opposed to Former Indirect Methods (Die Vorzüge des direkten Ammoniak-Gewinnungsverfahrens gegenüber dem alten indirekten Verfahren). In this number describes the Heck. Brunck and Koppers methods. Ills. Serial. 1st part. 1800 w. Glückauf— March 22, 1913. No. 41418 D.

Advantages of the Direct Method of Ammonia Recovery. C. Heck. From Glückauf. Report to the German Coke Committee on the method of recovering sulphate of ammonia direct from coke oven gases. Ills. 2500 w. Col Guard-May 2, 1913. No. 42002 A.

Progress in By-Product Recovery at Coke Ovens. J. E. Christopher. From a paper read before the Soc. of Chem. Ind. Illustrated review of the progress made in the recovery of by-products. 2500 w. Col Guard-April 18, 1913. No. 41763 A.

The Extraction of Ammonium Sulphate by Means of the Sulphur Contained in Coke-Oven Gases (Ueber die Gewinnung von Ammoniumsulfat mit Hilfe des in den Kokereigasen enthaltenem Schwefels). J. Reichel. An explanation of the Burkheiser wet process. Ills. Serial, 1st part. 3100 w. Glückauf-Apr. 12, 1913. No. 42115 D.

Ammonia Stills in By-Product Coke-Oven Plants. A. Thau. Trans. from Gluckauf. Illustrates and describes types of stills. 4500 w. Ir & Coal Trds Rev— June 27, 1913. Serial, 1st part. No. 43651 A.

A Contribution to the History of the Direct Recovery Process. Otto Ohnesorge. Reviews the history of the process of recovering ammonia direct from the gas and the present stage of the process. Drawing. 3000 w. Ir & Coal Trds Rev -Oct. 10, 1913. No. 45990 A.

Coking Plants

Production and Industrial Application of By-Product Coke Oven Gases. Becker and L. B. Robertson. Read at Chicago, before the Am. Chem. Soc. Outlines the process of distillation of coal and the treatment and application of the

July, 1913. No. 43859 C.

Automatic Operation of Tar Coking Plants with Especial Attention to Gas Removal (Selbstätige Betriebsüberwach-ung auf Teerkokereien mit besonderer Berücksichtigung der Gasabsaugung). A. Thau. This first article considers various makes of manometers. Ills. Serial. 1st part. 3500 w. Glückauf-Oct. 19, 1912. No. 37412 D.

Waste in Coking. Guy E. Mitchell. Reports savings possible by using by-product coke ovens instead of beehive ovens. Ills. 2200 w. Col Engr—Sept., 1913. No. 44848 C.

The Recovery of Ammonia from the Gases of Distillation of Oil in Coking Plants (La récupération de l'ammoniaque du gaz de distillation de la houille dans les cokeries). M. Desmarets. The indirect and direct sulphide and simultaneous methods. Ills. 9500 w. Rev de Metall—Aug., 1913. No. 45324 H.

Study of Some New Systems of Tar Condensation from Oil Gases and of the Production of Ammonium Sulfate (Étude des nouveaux systémes de condensation goudronneuse du gaz de houille et de prosulfate d'ammoniaque). duction du Charles Berthelot. Details of each system, comparisons with older methods, and advantages and faults of new methods. Ills. Serial, 1st part. 22000 w. Rev de Metall-Aug., 1913. No. 45325 H.

See also Benzol, and Coal Tar, under Coal and Coke, and Fuel, under MECHAN-ICAL ENGINEERING, Combustion Motors.

Collieries

The Development of New Colliery Districts, with Special Reference to the Support of the Surface. Hubert Bradshaw. Abstract of a paper before the S. Staffordshire & Warwickshire Inst. of Min.

Collieries

Electric Power

Engrs. Discusses questions of development of surface and sub-surface in colliery districts. 3000 w. Ir & Coal Trds Rev—March 14, 1913. No. 40836 A.

The Power Requirements and Installations at Anthracite Collieries. Harry M. Warren. A general description of conditions in the Lackawanna field. 1500 w. Jour Worcester Poly Inst—May, 1913. No. 42403 C.

Coal Washery and By-Product Coke-Oven Installation at Holmewood Colliery. Illustrated description. Plate. 1200 w. Ir & Coal Trds Rev—May 2, 1913. No. 42250 A.

Creating a Colliery Community in the Highlands of Kentucky. George Byrne. Illustrated account of developments near Jenkins, Ky. 3000 w. Mfrs' Rec—June 5, 1913. No. 42671.

A Notable Scottish Colliery. Illustrated account of a mine worked before the 13th century and now equipped with modern machinery and giving large output. 3000 w. Col Engr—July, 1918. No. 43406 C.

Askern Colliery. Illustrated description of a colliery showing the latest mining practice in England. Plate. 3000 w. Ir & Coal Trds Rev—July 18, 1913. No. 44041 A.

New Pits of the Warwickshire Coal Company, Limited. Illustrated description of the plant. 2500 w. Ir & Coal Trds Rev—July 11, 1913. No. 43905 A.

The Sinking and Equipping of Bedwas Colliery. Edmund L. Hann. From a paper read before the S. Wales Inst. of Engrs. An account of the sinking and layout. Ills. 5500 w. Col Guard—Sept. 5, 1913. No. 45151 A.

Bullcroft Main Colliery. Illustrated detailed description of this colliery near Doncaster, England. Plate. 3000 w. Ir & Coal Trds Rev—Oct. 17, 1913. No. 46284 A.

Culm

Burning Anthracite Culm. J. E. Parrish. Shows how improvements in boilers and grates have made it possible to utilize much waste coal, and predicting that all will eventually be utilized. Ills. 1000 w. Coal Age—Oct. 11, 1913. No. 45786.

Cutting Machines

Machine Mining in the South Wales Steam Coals. G. D. Budge and W. E. Jayne. From a paper read before the S. Wales Inst. of Engrs. Discusses a system of machine mining used under unfavorable conditions. Ills. 3300 w. Col. Guard—Sept. 26, 1913. No. 45737 A.

Electric Power

Electric Service in Coal Regions. Illustrated description of the features characterizing the system of the Luzerne Co. Gas & Electric Co. of Kingston, Pa. 1200 w. Elec Wld—Nov. 2, 1912. No. 37280.

Notes on the Installation of Colliery Electrical Plant. F. E. Harris. Read before the N. of Eng. Br. of the Assn. of Min. Elec. Engrs. On the distribution system, control of current, earthed neutral, cables, etc. 3000 w. Ir & Coal Trds Rev—Dec. 6, 1912. No. 38254 A.

Application of Electric Power for Coal Mining. S. R. Stone. Discusses details of such power plants, especially the plant at Scranton, Pa. 3800 w. Min & Engng

Wld-Dec. 14, 1912. No. 38209.

The Electrification of a Group of Small Collieries. Campbell King. Read before the W. of Scotland Assn. of Min. Elec. Engrs. Suggestions for the applications of electric power. 2500 w. Ir & Coal Trds Rev—Nov. 29, 1912. No. 38137 A.

100-Horse-Power Electrically Driven Hauling Gear. Illustrated description of a hauling plant with special features, for use at collieries in India. 700 w. Engr, Lond—Dec. 13, 1912. No. 38532 A. The Lancashire Electric Power Com-

The Lancashire Electric Power Company's System and Its Application to Lancashire Collieries. Charles D. Taite. Illustrated detailed description. Discussion. Ills. 2 plates. 6500 w. Trans Manchester Geol & Min Soc—Feb., 1912. No. 39566 N.

Electrically Equipped Coal Mines in Nova Scotia. C. H. Wright. Illustrates and describes the application of exhaust steam turbine and pulverized fuel in the stations of the Dominion Coal Co. Operation on a 25-cycle current. 1800 w. Elec Wld—Feb. 1, 1913. No. 39636.

Electricity in Coal Mines. The subject is treated from the central-station point of view, and facts and figures given. Ills. 4000 w. Elec Rev & W Elect'n—March 1, 1913. No. 40252.

Electricity in Anthracite Mining. William Paul Jennings. Illustrated description of the anthracite under-cutter and its operation. 900 w. Sch of Mines Qr—Jan., 1913. No. 40762 D.

Central Station Power for Coal Mines. C. W. Beers. A discussion of the case of mine central station vs. public service corporation supply. 4000 w. Pro Am Inst of Elec Engrs—April, 1913. No. 41669 F.

Purchased Power in Coal Mines. H. C. Eddy. Considers the commercial aspects of purchased power vs. the isolated plant in the bituminous coalfields of Western Penn. and Eastern Ohio. 2000 w. Pro Am Inst of Elec Engrs—April, 1913. No. 41671 F.

The Electrification of Cannock Chase Colliery. S. F. Sopwith. Read before the S. Staffordshire and Warwickshire Inst. of Min. Engrs. A summary of the plant explaining the economy and advantages derived from the adoption of electric power. Ills. 1500 w. Col Guard—April 25, 1913. No. 41926 A.

See also Hydroelectric and Load Factors, under Electrical Engineering,

Generating Stations.

England

The South-Eastern Coalfield, the Associated Rocks, and the Buried Plateau. W. Boyd Dawkins. Abstract of a paper read before the Manchester Geol. & Min. Soc. Information concerning the southeastern coalfield of England and its extension, the rocks, geology, etc. 5000 w. Ir & Coal Trds Rev—Nov. 8, 1912. No. 37651 A.

Explosions

Dust Explosions. C. M. Young. Discusses the influence of composition and fineness of dust, and the presence of gas on the liability of ignition. 3500 w. Mines & Min—Dec., 1912. No. 38007 C.

Mines & Min—Dec., 1912. No. 38007 C.
The Coal Dust Question. Samuel Dean.
Shows that a "wet mine" is not necessarily a safe mine, and describes methods of applying stone dust. Ills. 2500 w. Mines & Min—Dec., 1912. No. 38004 C.

The Prevention of Coal-Dust Explosions by Rock Dust and the Results of Such Tests in English Coal Mines (Die Bekämpfung der Kohlenstaubexplosionen durch Gesteinstaub und die Durchführung dieses Verfahrens im englischen Steinkohlenbergbau). F. Friedensburg. Methods adopted in conducting experiments. Ills. Serial. 1st part. 3000 w. Glückauf—Feb. 1, 1913. No. 40511 D.

Cincinnati Mine Explosion, Courtney, Penn. R. Dawson Hall. Illustrated account of an explosion in a mine that had been operated about 75 years. 2000 w. Coal Age—May 3, 1913. No. 41887.

Earthquake Strains and Stresses in Relation to Mine Explosions. F. Napier Denison. Brief account of work to determine the causes of coal mine explosions. 2200 w. Jour Can Min Inst—Vol. XIV. No. 42020 N.

The Influence of Incombustible Dusts on the Inflammation of Gaseous Mixtures. Third report of the Explosions in Mines Committee giving results of experiments made. 8500 w. Col Guard—April 18, 1913. Serial. 1st part. No. 41765 A.

A Record of the Origin of the Principle of Stone-Dusting for the Prevention of Colliery Explosions. W. E. Garforth. Read Before the Inst. of Min. Engrs. An

account of investigations made in connection with the danger of coal dust in mines, especially the experiments with stone dust. 6000 w. Ir & Coal Trds Rev—June 6, 1913. No. 42895 A.

The Cincinnati Mine Disaster. William Z. Price. An account of this accident near Pittsburgh, the method of mining, rescue work, and reports of the mine inspector and the Commissioners. Ills. 5000 w. Col Engr—June, 1913. No. 42613 C.

The Cadeby Main Colliery Explosion. The report of R. A. S. Redmayne to the Home Secretary on the causes of and circumstances attending the explosions which occurred July 9, 1912. Ills. 5000 w. Col Guard—May 23, 1913. Serial. 1st part. No. 42752 A.

The Cadeby Main Disaster. Abstract of the report of R. A. S. Redmayne as to the causes of and circumstances attending the explosions that occurred July 9, 1912. 4500 w. Ir & Coal Trds Rev—May 16, 1913. No. 42547 A.

The Reopening of the Norton Colliery with Self-Contained Breathing Apparatus After an Explosion. J. R. L. Allott. Abstract of a paper read before the Inst. of Min. Engrs. Explains the possible causes of the explosion and gives an account of the reopening of the pit. 6500 w. Ir & Coal Trds Rev.—June 6, 1913. No. 42896 A.

The Brookside Mine Disaster. William Z. Price. An illustrated account of the accident in Schuylkill Co., Penn., the conditions and the rescue work. 2000 w. Col Engr—Sept., 1913. No. 44854 C.

The Control of Coal Dust with Various Moisture Containers against Explosions of Black Powder and Dynamite (Das Verhalten von Kohlenstaub mit verschiedenem Feuchtigkeitsgehalt gegen Schüsse von Schwarzpulver und Gurdynamit). Herr Woltersdorf. Results from a series of tests. 3000 w. Glückauf—Aug. 30, 1913. No. 45395 D.

See also Coal Dust, under Coal and Coke.

Firedamp

Testing for Firedamp with Wire Loop. Henry Briggs. Describes a device by which a safety lamp flame is rendered non-luminous, enabling the gas cap to be clearly seen. 2000 w. Col Engr—March, 1913. No. 40277 C.

Recent Experience on the Ignition of Firedamp by Electric Lamp Filaments. Dr. Jean Meunier. Reviews recent experiments by investigators. Ills. 2500 w. Ir & Coal Trds Rev—July 4, 1913. No. 43727 A.

Flushing

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Geology

Flushing

Flushing Anthacite Workings. trates and describes methods employed in the thick and moderately thick seams of the Schuylkill region of Pennsylvania. 5600 w. Col Engr—May, 1913. No. 41829 C.

Gas Analysis

Apparatus for Gas-Analysis Laboratories at Coal Mines. George A. Burrell and Frank M. Seibert. Gives results of a study of mine atmospheres and the most efficient methods of detecting dangerous mine gases. Ills. 6500 w. U S Bureau of Mines—Tech paper 14. No. 42447 N.

On the Kinetic Theory of Gases. Henry Cunynghame. A lecture to mining students giving a mathematical sketch of the Kinetic theory. 5000 w. Col Guard —May 9, 1913. Serial. 1st part. No. 42283 A.

Gas Power

Gas Power for Collieries. Sydney F. Illustrated description of a plant for using coke oven gas in large en-gines at a British Colliery. 2500 w. Col Engr-June, 1913. No. 42611 C.

Gas Producers

The Process in the Gas Generator on the Ground of the Second Law of Thermodynamics (Die Vorgänge im Gasgenerator auf Grund des zweiten Hauptsatzes der Thermodynamik). Kurt Neumann. A study of the chemical changes occurring in the producer. Ills. Serial. 1st part. 5500 w. Zeit des Ver deutscher Ing-Feb. 22, 1913. No. 40542 D.

Operating Cost Dependent on Furnace Practice (Betriebskosten in Abhängigkeit von der Ofenart). Dr. Volkmann. A series of two articles following the serial on the operation of distillation furnaces. This first one discusses operating costs of distillation furnaces. Serial. 1st part. 3600 w. Feuerungs-April 1, 1913. No.

41440 D.

Annular Producers for Use with Low-Grade Bituminous Fuels (Der Ringgenerator zur Erzeugung von Heiz- und Kraftgas aus minderwertigen, bituminösen Brennstoffen). J. Recktenwald. The advantages of this type and designs of furnaces for this service. Ills. w. Feuerungs — April 1, 1913. 4000 41441 D.

The Gas Producer and Producer Gas. C. D. Smith. Reviews the history of the development, describing types of gas producers and of gas. Gas power plants and their management, tests, etc. Discussion. Ills. 9000 w. Jour Cleveland Engng Soc

—May, 1913. No. 42431 D.

A Modification of the Jäger Method of
Gas Analysis. S. H. Worrell. Descrip-

tion of method and apparatus used. Ills. 3000 w. Met & Chem Engng-May, 1913. No. 41900 C.

The Commercial Trend of the Producer-Gas Plant in the United States. R. H. Fernald. Gives views of manufacturers of producer gas plants, the present status of such plants, views of owners and operators, and valuable data. 92 pp. U. S. Bureau of Mines—Bul 55. No.

42450 N.

Heat Balance of a Producer. Julian C. Smallwood. Gives calculations from a test of an anthracite suction-producer plant, and modifications necessary for other types. 2500 w. Power—June 24, 1913. No. 43123.

Some Perfections Produced in Gas Producers of the Siemens Type (Des perfectionnements apportés au gazogène du type Siemens). Paul Cousin. A detailed study of the Siemens producer, its operation and advantages. Ills. 2800 w. Tech Mod—May 15, 1913. No. 43067 D.
Lignite Suction-Producer Troubles.

George W. Muench. A report of troubles and their remedies. 1500 w. Power

July 15, 1913. No. 43700. Extraction of By-Products from Producer Gas (Ueber Nebenproduktengewinnung aus Generatorgas). R. Schulz. Comparative costs of operation from Mond and Zone apparatus. Diagrams. 2800 w. Stahl u Eisen-July 24, 1913. No. 44607 D.

Suction and Pressure Gas Producers. Especially for Glass Works (Saug- und Druckgasgeneratoren, insbesondere für Glashütten). E. H. Steck. Plans and arrangement of producer plants. Ills. 2000 w. Feuerungs—July 1, 1913. No. 44676 D.

The Gasification of Solid Fuels (Die Vergasung fester Brennstoffe). Heym. A study of available gases from the different combustibles. Ills. Serial, 1st part. 6000 w. Feuerungs—July 15, 1913. No. 44677 D.

Gas-Producer Chemistry. Information concerning the Muench. elements and compounds that concern producer work. 1500 w. Power—Sept.

23, 1913. No. 45276.

Modern Gas Producers and Coal Economy in Melting and Heating Furnaces. John A. Smeeton. Considers conditions affecting the amount of coal required per ton of steel melted, especially discussing the quality of the gas. Ills. 4000 w. Ir & Coal Trds Rev—Aug. 22, 1913. No. 44932 A.

See also Gas Engines, under MECHANI-CAL ENGINEERING, Combustion Motors.

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Origin of Coal and Carboniferous

Flora. A. R. Harwood. A lecture given to the Marlborough Lit. Soc. Explanation of the conditions under which coal was formed. 2000 w. Col Guard-Feb.

28, 1913. No. 40482 A.

The Genesis of Fissures in the Rhine-Westphalia Coal District (Die Entstehung der Sprünge im rheinisch-westfälischen Steinkohlengebirge). H. Quiring. A study of the geology of the region. Ills. 2600 w. Glückauf—March 29, 1913. No. 41419 D.

Geology of the Panther Creek Valley, enn. W. B. Richards. Illustrates and Describes the geology of an important anthracite field. 3500 w. Coal Age—May 10, 1913. No. 41949.

Results of a Paleobotanical Study of Mesa Region of Colorado and New Mexico. F. H. Knowlton. A study with the conclusion that the Raton and Denver formations are Eccene in age. 1500 w. Am. Jour of Sci—May, 1918. 42424 D.

Characteristic Deposits of Coal and Eruptive Stone in the Eastern Part of the Waldenburg Field (Die Lagerungs-verhältnisse des Karbons und der Eruptivgesteine im östlichen Teile des Waldenburger Beckens). G. Berg. A geological study of the porphyritic character of the district. Maps. 2800 w. Glückauf —Aug. 30, 1913. No. 45393 D.

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Coal Resources in the Rhine-Westphalia Bituminous Districts (Die Kohlenvorräte des rechtrheinisch-westfälischen Steinkohlenbezirks). Herrn Kukuk and Mintrop. A study of the geologic conditions of the region. Plate. 7500 w. Glückauf —Jan. 4, 1913. No. 40010 D.

Coal Extraction, Consumption, and Export in Germany (Kohlen-Gewinnung, Verbrauch, und Aussenhandel Deutschlands). Ernst Jüngst. Comparative review from 1885 to 1912. Serial. 7000 w. Glückauf - March 8, part. No. 41415 D. 1913.

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The Influence of the Ems-Weser Canal on the Coal Market (Der Einfluss des Ems-Weser-Kanals auf den Kohlen-markt). Herr Mühlefeld. The effect of cheaper transportation throughout the region traversed by the canal. Map. 8000 w. Glückauf—July 19, 1913. No. 44618 D.

Germany's Coal Reserves. Böker, in Glückauf. Gives estimates compiled for presentation to the Int. Geol. Cong. at Toronto, Canada. 1200 w. Col. Guard—Aug. 22, 1913. No. 44915 A. See also Geology, and Silesia, under

Coal and Coke.

Gob Fires

Some Experiences of Gob Fires in Fife Coalfields. James Hendrie. Read before the Nat. Assn. of Col. Mgrs. Ills. 2000 w. Ir & Coal Trds Rev-April 25, 1913. No. 41936 A.

Some Notes on Dealing with Gob Fires in Highly-Inclined Workings. Thomas Watson. Read before the Nat. Assn. of Col. Mgrs. 1000 w. Ir & Coal Trds Rev — April 25, 1913. No. 41937 A.

Great Britain

The Coal Resources of Great Britain. A. Strahan. Abstract of a chapter contributed to "The Coal Resources of the World." 8000 w. Ir & Coal Trds Rev—Sept. 19, 1913. No. 45575 A.

Indian Coal and Railways in 1911. F I. Leslie Ditmas. Deals with the coal mining and railway working. 4500 w. Ir & Coal Trds Rev—Nov. 29, 1912. No.

Coal Mining in India. J. R. R. Wilson. Lecture to the Nat. Assn. of Col. Mgrs.

(Yorkshire Branch.) Ills. 3000 w. Ir & Coal Trds Rev—Jan. 3, 1913. Serial. 1st part. No. 39174 A.
The Coal Industry of India. Sir Ralph Percy Ashton. The present number reviews the growth of the industry. 3000 w. Col Guard-Feb. 14, 1913. Serial, 1st

part. No. 40126 A.

Indian Railways and the Ownership of Coal Property. Sir Ralph Percy Ashton. Brief discussion of the relations of the railways and the coal industry. 1800 w. Col Guard — March 20, 1913. No. 41013 A.

The Coalfields of India. Prof. V. Ball. Revised by R. R. Simpson. Abstracted from Mem. of the Geol. Survey of India. Information concerning the industry, the production, trade, labor, &c. Ills. 2500 w. Ir & Coal Trds Rev—July 25, 1913. No. 44191 A.

Inspection

Coal Mines Inspection in 1912. Digest of the reports of H. M. Inspectors of

Japan

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Mining Methods

Mines. Also editorial. Ills. 45000 w. Col Guard (Sup)—Sept. 12, 1913. No. 45297 A.

Japan

Development of the Coal Mining Industry of Japan. An illustrated account describing mining methods used in developing various properties. 2500 w. Min & Engng Wld—Dec. 28, 1912. No. 38690.

American Jig Machinery (Amerikanische Setzmaschinen). R. Neumann and R. Blumenfeld. Illustrating and describing several types of jigs used in coal washeries. 1500 w. Zeit des Ver deutscher Ing—June 7, 1913. No. 43526 D.

Kansas

The Hamilton No. 8 Mine. L. L. Wittich. Describes the geology of the region around Arms, Kan., the coal and methods of working. Ills. 1200 w. Mines & Min—Dec., 1912. No. 38006 C. Kentucky

The Harlan Coal Field in Kentucky.
W. R. Peck and R. J. Sampson. Illustrated description of one of the subdivis-

ions of the Cumberland Gap coalfield. 2500 w. Coal Age—May 24, 1913. No. 42385.

Legislation

New Draft General Regulations. Gives proposed regulations for mines under the Coal Mines Act, 1911. 4500 w. Col Guard—Jan. 17, 1913. Serial. 1st part. No. 39473 A.

Lignite

Lignite and Its Uses. R. O. Wynne-Roberts. Read before the Regina Engng. Soc. On the formation and quality of lignite, reports of tests, uses, and other information. 6500 w. Can Engr—Dec. 19. 1912. No. 38380.

See also Fuels, under MECHANICAL ENGINEERING, Steam Engineering.

Methods

Quarrying Coal at Tofield, Alberta. Joseph H. Sinclair. Illustrates and describes methods of mining coal from beds so situated that they may be stripped and loaded directly into railroad cars. 1000 w. Col Engr — June, 1913. No. 42610 C.

Mine Cave

Mine Cave Commission Report. Gives the recommendations of the Anthracite Mine Cave Commission, and the remedy suggested to meet conditions. 3500 w. Col Engr—April, 1913. No. 40974 C.

Mine Fires

Underground Fires. W. A. Taylor. Read before the East. Branch of the Scottish Inst. of Min. Engrs. Considers difficulties met with in working seams

liable to spontaneous combustion. Ills. 2500 w. Ir & Coal Trds Rev—Feb. 28, 1913. No. 40497 A.

Mine Gases

Gases Met With in Coal Mines. Briefly discusses air, firedamp and its properties, principle of the safety lamp, detection of gas with safety lamp, and blackdamp. Ills. 2000 w. Col Engr—March, 1913. Serial. 1st part. No. 40279 C.

Ignition of Mine Gases by the Filaments of Incandescent Lamps. H. H. Clark and L. C. Ilsley. Detailed description of investigations to determine the degree of danger attending the use of certain sizes of incandescent lamps in atmospheres containing inflammable gas. Ills. 30 pp. U S Bureau of Mines—Bul 52. No. 41582 N.

The Influence of Inert Gases on Inflammable Gaseous Mixtures. J. K. Clement. Describes experiments made to determine the range of explosibility of mixtures of methane, or natural gas, with oxygen, carbon dioxide, and nitrogen. Ills. 3000 w. U S Bureau of Mines—Tech paper 43. No. 45298 N.

Mining

A Panel System of Coal Working. W. E. Lawrie. Explains conditions in Queensland, and advocates the adoption of the panel system for working the Aberdare seam, which is liable to fire. Ills. 3000 w. Queens Gov Min Jour—Oct. 15, 1912. No. 37631 B.

An Ideal Method of Mining. J. C. Edwards and H. M. Gibb. Plans and description of a system of mine development. 90 per cent of the coal is won by machines. 2500 w. Col Engr—July,

1913. No. 43405 C.

Mining Methods

Mining Steep Dipping Coal. A. A. Steel. Describes a method suggested to meet certain conditions in thin seams in Arkansas. 2500 w. Mines & Min—Jan., 1913. No. 38710 C.

1913. No. 38710 C.

Rearer Workings at Podmore Hall Collieries. William Barber. Read before the N. Staffordshire Inst. of Min. & Mech. Engrs. Describes the method of working, the alluvium difficulties, etc. Discussion. 3500 w. Col Guard—April 4, 1913. No. 41237 A.

Longwall Mining and Emery Pit, Dominion No. 10 Reserve, C. B. G. L. Burland. Describes the geology, mining methods, with details, and discusses advantages. Ills. 3500 w. Jour Can Min Inst—Vol. XIV. No. 42035 N.

Effect of Coal Mining on the Surface. Abstract translation of paper by M. Fayol, describing observations and experiments regarding increase of volume of

Montana

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Railroad Claims

crushed material and extent and direction of movement of broken strata. 4000 w. Col Engr-May, 1913. Serial. 1st part. No. 41831 C.

Montana

The Coal Fields of Montana. Eugene Stebinger. A summary of present information from the geologist's viewpoint. 11500 w. Bul Am Inst of Min Engrs-Sept., 1913. No. 45470 F.

New Zealand

The Brown Coals of Otago. A. Gordon Macdonald. Their physical, structural and economic geology, methods of utilizing low-grade fuels and their applicability to the coals of this region. 3000 w. Col Guard—Nov. 22, 1912. Serial. 1st part. No. 38028 A.

Nova Scotia

The Coal Trade of Nova Scotia in 1912. F. W. Gray. A résumé of the year. Ills. 3000 w. Can Min Jour-Jan. 15, 1913. No. 39237.

Sections of the Sydney Coal Fields, Cape Breton, Nova Scotia. Joseph G. S. Hudson. Sections prepared to illustrate the thickness of the productive coal seams and coal measures in the different lines of the Sydney field. Tables & Maps. 2000 w. Can Dept of Mines-No. 227. No. 44491 N.

Nystagmus

Miners' Nystagmus. Reviews a lecture by Dr. T. Lister Llewellyn on this occupational disease found among coal miners. 2000 w. Ir & Coal Trds Rev—June 6, 1913. No. 42899 A.

The Coal Fields of Ohio. Greeley Burroughs. Map and description of the locations, extent and quality of the principal coal seams of the state. 3000 w. Col Engr-May, 1913. No. 41830 C.

Operation

Mining Plant of the Petros Coal Co. A. W. Evans. Describes the operation, with special reference to the gravity plane and the use of a five-car rotary dump. Ills. 1000 w. Col Engr—Oct., 1913. No. 45640 C.

Origin

The Origin and Deposition of Coal. W. B. Richards. Abstract of a paper read before the Panther Valley Min. Inst. A detailed summary of modern theories of the formation of coal. Ills. 2200 w. Coal Age—May 31, 1913. No. 42624.

Peat

The Utilization of Peat Fuel. Reports the investigations of the Canadian Department of Mines. Ills. 4000 w. Cassier's Mag—Nov., 1912. No. 38364 B.
Canadian Studies of Peat Fuel in Gas

Producers and the Elimination of Tar

from Producer Gas. From a report by B. F. Haanel giving a record of experiments at the fuel-testing station in Ottawa. Ills. 4500 w. Eng News—Dec. 5, 1912. No. 38066.

Peat. G. E. Brown. Information concerning the peat deposits in the United States, discussing its availability for fuel. Ills. 1200 w. Yale Sci M—Jan., 1913.

No. 39504 C.

Present Position and Outlook for Peat Gasification (Heutiger Stand und Aussichten der Torfvergasung). A. Wihtol. A review of modern processes and adaptations. 3700 w. Feuerungstechnik-Jan. 1, 1913. No 40022 D.

Investigation of the Peat Bogs and Peat Industry of Canada, 1910-1911. A. Maps and Ills. 50 pp. Can Dept of Mines-Bul No. 8. No. 41707 N.

Pit Mining

Strip-Pit Mining in Kansas. Barry E. Illustrated description of the open cut system of mining in this bituminous field. 1000 w. Coal Age—Oct. 25, 1913. No. 46188.

Preparation

The Preparation of Coal. Buchanan. Reviews changes introduced in Illinois during the last 35 years. Ills. 2000 w. Coal Age—May 17, 1913. No.

Preparation of Anthracite. Hugh Archbald. General discussion of present methods of cleaning and sizing hard coal. Ills. 2000 w. Coal Age-May 3, 1913. No. 41886.

Investigation on the Preparation of Fine Coal (Untersuchungen über die Aufbereitung der Feinkohlen). Jüngst. Theoretical and practical notes, especially covering tests of fineness. Ills. 3700 w. Glückauf—Aug. 23, 1913. No. 45386 D.

Producer Gas

See also Gas Firing, under MECHANI-CAL ENGINEERING, Steam Engineering.

Production

The Industrial Importance of Coal. Frederick W. Saward. Abstract of an interesting paper discussing the possible results of a general and abrupt cessation in production. 2500 w. Coal Age-Aug. 16, 1913. No. 44437.

Queensland

Coal Resources of Queensland. B. Dunstan. A general review. 7000 w. Queens Jour-June 14, 1913. Gov Min 43884 B.

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Some Notes on Railroad Claims. H. B. Wolf and J. B. Nessle. Abstract of paper read before the M. O. I. Coal Assn. Comments on the difficulties the dealer is li-

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Stoppings

able to encounter collecting damages for coal lost in transit. 2000 w. Coal Age-July 12, 1913. No. 43674.

Refining

The Refining of Coal. Reviews progress in the development of fuel values by the engineers of the experiment station of the University of Illinois. 3500 w. Cassier's—July, 1913. No. 43353.

Regulations

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41386 A

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Review of 1912

The Coal Trade for 1912. Reviews by districts the British coalfields, prices, contracts, sales, etc. Also editorial. 32500 w. Col Guard-Jan. 3, 1913. Serial. 1st part. No. 39152 A.

Review of Coal Mining in the United States in 1912. Edward W. Parker. A review by states. 5000 w. Min & Engng Wld—Jan. 25, 1913. No. 39419.

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Royalties as Percentages of Market Price. William Griffith. Considers that public lands should be leased for long periods or perpetually. 1000 w. Age—Sept. 20, 1913. No. 45245.

Rules

Rules and Regulations to Govern the Coal Mines at Gebo, Wyo., Leased to the Owl Creek Coal Co. 3500 w. U.S. Bureau of Mines-May 10, 1913. No. 43292 N.

Safety Lamps
I. The Effects of Deficiency of Oxygen on the Light of a Safety Lamp. J. S. Haldane. II. Illumination of the Coal Face, with Special Reference to the Incidence of Miner's Nystagmus. T. L. Llewellyn. Two papers read and discussed together before the S. Staffordshire & Warwickshire Inst. of Min. Engrs. 7500 w. Col Guard-Oct. 25, 1912. No. 37292 A.

Sampling

Coal Sampling and Analysis. Extracts from reports issued by the South African Engng. Standards Committee with the object of standardizing methods. 3000 w. Col Guard-April 25, 1913. Serial. 1st part. No. 41927 A.

Screening

A Combined Screening and Picking Frank E. Mueller. Illustrated Table. description of a successful arrangement. 1000 w. Coal Age—May 3, 1913. No. 41885.

Silesia

Résumé on the Development of Mining and Metallurgy in Silesia (Uebersicht über die Entwicklung des schlesischen Berg- und Hüttenwesens). Herr Dünkelberg. An historical sketch of practice from the 12th century to the present. 3500 w. Glückauf-Aug. 30, 1913. No. 45390 D.

Geological Progress in Upper Silesia within the Past Twenty Years (Die Fortschritte der Geologie Oberschlesiens in dem letzten zwanzig Jahren). Dr. Michael. A review of the several studies made upon the various parts of the region. 2500 w. Glückauf—Aug. 30, 1913. No. 45391 D.

Upper Silesian Coal Fields in Comparison with Other Mid-European Fields in the Aspect of the Coal Flora (Das oberschlesischen Steinkohlenbecken im Ver-gleich mit andern Becken Mitteleuropas auf Grund der Steinkohlenfloren). W. Gothan. A comparative study of the fossil characteristics of Mid-European coal deposits. 8000 w. Glückauf—Aug. 30, 1913. No. 45392 D.

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The Coalfields of South Africa. Rowland Gascoyne. A geological sketch, with description of the different fields. 21800 w. S African Min Jour-Sept., 1912. (Special.) No. 37874 N.

Spontaneous Combustion

The Spontaneous Combustion of Coal. Sydney F. Walker. Explains the cause of igniting and how it may be prevented. Ills. 5000 w. Gas Wld—Nov. 30, 1912. No. 38109 A.

The Absorption of Oxygen by Coal. T. F. Winmill. From a paper read be-fore the Inst. of Min. Engrs. An ac-count of experiments dealing with the rate of absorption of oxygen by coal dust kept at a constant temperature. 4000 w Col Guard-Sept. 26, 1913. Serial, 1st part. No. 45736 A.

Further Researches in the Microscopical Examination of Coal, Especially in Relation to Spontaneous Combustion. James Lomax. From a paper before the Inst. of Min. Engrs. 4000 w. Col Guard

-Sept. 26, 1913. No. 45738 A.

Stoppings Why Is a Stopping? Oscar Cartlidge. Describes results of improperly built stoppings, and different methods of ef-

Subsidence

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Weather Forecasting

fective construction. Ills. 1200 w. Mines & Min-Nov., 1912. No. 37184 C.

Subsidence

Relation of Subsidence to Packing. George Knox. Discusses the effects and direction of operation of the forces liberated when the coal is removed in working. Ills. 2500 w. Col Engr—Sept., 1913. No. 44851 C.

Car

The Distillation of Tar in Metallurgical Practice. Gevers-Orban. Read before the Iron & Steel Inst. Explains the importance of the tar question and describes the Cava process. Ills. 1000 w. Ir & Coal Trds Rev—Sept. 5, 1913. No. 45190 A.

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The Taxation of Coal Mines in Elsass-Lothringen (Die Besteuerung des Steinkohlenbergbaues in Elsass-Lothringen). H. E. Böker. Reviews taxation history. 5600 w. Glückauf-Nov. 28, 1912. No. 38421 D.

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Tennessee

Battle Creek Mine, Tenn. William McIntyre, Jr. Illustrates and describes mining methods determined by peculiar geological conditions in this coal field. 2000 w. Mines & Min-Dec., 1912. No. 38001 C.

Testing Stations

The Government Testing Plant at Brüx for Impure Air, Coal Dust, Inflammable Gases, etc. (Die staatliche Versuchsanstalt für Schlagwetter, Kohlenstaub, Brandgase usw. in Brüx). Karl Stauch. The plant, its location, equipment and testing facilities. Ills. Serial, 1st part. 1200 w. Oest Zeit f Berg u Hütten— Sept. 6, 1913. No. 45375 D.

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Modern Steel-Tipple Design. John A. Garcia. Reviews developments leading to improved construction of headframe and screening plant, describing a new design. Ills. 2000 w. Coal Age — May 24, 1913. No. 42384.

Shaking Screens in a Concrete Tipple. O. G. Petersen. Illustrated description of a change in the design of shaking screens so as to adapt them to use in concrete tipples. 1200 w. Coal Age—June 21, 1913. No. 42996.

United States

Fuel Production in the United States. R. H. Byrd. Discusses the present consumption and future supply. Ills. 1200 w. Sci Am—July 5, 1913. No. 43428.

Utah

A Recent Utah Coal-Mine Development. W. R. Elliott. Illustrated description of a mining plant where the topography of the country would not permit surface haulage. 2500 w. Coal Age—July 26, 1913. No. 43919.

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Valuation of Coal Land. Н. Chance. Appraisal methods by considering the five factors; rate of interest; royalty; quantity of coal; rate of mining, and taxes and miscellaneous expenses. 10400 w. Bull Am Inst Min Engrs-July, 1913. No. 44020 F.

Vancouver

The Geology of the Nanaimo Coal District. Charles H. Clapp. Describes this coal district of Vancouver, and its interesting geological features. Ills. 5000 w. Jour Can Min Inst—Vol. XV. No. 42049 N.

Ventilation

Common Sense Mine Ventilation. J. C. Gaskill. Discusses what constitutes good mine ventilation from the economic standpoint and how to obtain it. 4000 w. Col

Engr-March, 1913. No. 40271 C.
Too Much Ventilation. W. H. Booth. Discusses the importance of the amount of moisture in the ventilating current, and the methods that have been employed for its control. 1500 w. Col Engr-

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Coal Mine Ventilation in the Connelsville Coke Region. Austin King. Considers the conditions existing and manner of dealing with them. 2500 w. Col Engr—March, 1913. No. 40274 C.

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Washery
Coal Washing Plant at a Colliery. lustrated description of a plant installed at North Shields. 1200 w. Engr, Lond
—Jan. 3, 1913. No. 39164 A.
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Weather Forecasting

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West Virginia

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British Columbia

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West Virginia

The Lathrop Coal Co.. J. Harvey Williams. Illustrated description of the new plant at Panther, W. Va., and the method employed in mining. 1000 w. Mines & Min-Nov., 1912. No. 37183 C.

Yukon

The Yukon Coal Fields. D. D. Cairnes. A summary of what is known concerning the different coal fields of Yukon, emphasizing their future economic importance. Map & Ills. 9000 w. Jour Can Min Inst—Vol. XV. No. 42051 N.

COPPER

Africa

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The Determination of Arsenic and Antimony in Converter and Electrolytic Copper. E. E. Brownson. Describes the treatment and methods as applied in the laboratory of the Boston and Montana Reduction Department, at Great Falls, Mont. 3000 w. Bul Am Inst of Min Engrs—Aug., 1913. No. 44747 F.

Arctic Coast

The Coppermine Country. J. B. Tyr-rell. Presents evidence of the existence of a great copper bearing area on the Arctic Coast of America, near the Coppermine River. Map. 9500 w. Jour Can Min Inst—Vol. XV. No. 42055 N.

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Herbert Haas. Reviews the essential features in the development of the copper converter. 2500 w. Min & Sci Pr-Oct. 25, 1913. No. 46380.

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Electrolytic Refining
Notes on the Electrolytic Refining of
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Tests at the Great Falls Works, Butte, and conclusions reached, showing that cathodes may be economically produced. 1700 w. Bull Am Inst Min Engrs—July, 1913. No. 44008 F.

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Flue Gases Flue Gases

Determination of Gases in Smelter Flues; and Notes on the Determination of Dust Losses at the Washoe Reduction Works, Anaconda, Mont. Edgar M. Dunn. Describes the methods and apparatus used and considers other methods. Ills. 13000 w. Bul Am Inst of Min Engrs—Aug., 1913. No. 44758 F.

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Peter E. Peterson. Describes the general scheme of operations. 1600 w. Min Engng Wld—Sept. 6, 1913. No. 44937.

Bullwhacker Leaching Plant, Butte, Mont. Peter E. Peterson. Describes the plant, the ore flow sheet, and other details. 1500 w. Min & Engng Wld—Oct. 1, 1913. No. 45674. Low-Grade Ores

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H. Sales. A study of the geology of this district where ore deposits are rich and extend to great depths. Copper, silver, gold, and zinc are produced. Ills. 44500 Bul Am Inst of Min Engrs-Aug., 1913. No. 44750 F.

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Work of the Nevada Consolidated. Pope Yeatman. Information from the annual report to the directors of the Nevada Consolidated Copper Co. 2000 Min & Sci Pr-May 3, 1913. 41939.

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New Mexico

Sandstone Copper Deposits at Bent, New Mexico. Sydney H. Ball. Notes on the property of the Tularosa Copper Co. describing the geology, structure, etc., and discussing the genesis of the ores. Ills. 4500 w. Min & Sci Pr—July 26, 1913. No. 44097.

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Sudbury Nickel-Copper Industry. Reginald E. Hore. Information concerning the extent of the deposits, methods of mining the ore, heap roasting, and smelting to matte. Ills. 1300 w. Mines & Min-Feb., 1913. No. 39626 C.

Magmatic Origin of Sudbury Nickel-Copper Deposits. Reginald E. Hore. study of the processes involved in the solidification of the magma, and the rela-

tionship between the ore deposits and furnace products, showing how these facts are in accord with the theory of origin. 3000 w. Qr Bul of Can Min Inst— March, 1913. No. 41601 N.

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Sorting, Roasting and Smelting Nickel-Copper Ore, Canadian Copper Company. Illustrated detailed description of methods used at the mines of this company. 1500 w. Can Min Jour-Aug. 1, 1913. No. 44206.

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Gossan Outcrops of Cupriferous Pyrite. H. W. Turner. Describes indications of copper deposits, effects of weathering, illustrating examples in the Ural region. Ills. 2200 w. Min Mag—Nov., 1912. No. 37905 B.

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Chemistry in the Reduction Processes in Use at Anaconda, Mont. Frederick Laist. A discussion of the reactions going on between the minerals and compounds in the various furnaces. 3500 w. Bul Am Inst of Min Engrs—Jan., 1913. No. 39452 F.

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Notes on the Great Falls Electrolytic Plant. Willis T. Burns. A record of a refinery that has for 17 years been operating under conditions not to be found in any similar plant. Ills. 9500 w. Bul Am Inst of Min Engrs—Aug., 1913. No. 44757 F.

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Smelting

Reverberatory Furnace

The Development of the Reverberatory Furnace for Smelting Copper Ores. E. P. Mathewson. Reviews the development and gives the effect of lengthening the reverberatory furnace at the Washoe smelter, Anaconda, Mont. Ills. 2500 w. Bul Am Inst of Min Engrs—Jan., 1913. No. 39451 F.

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I. The World's Copper Production and Consumption. II. Copper Production in the United States in 1912. General reviews of the past year. 4000 w. Min & Engng Wld—Jan. 25, 1913. No. 39416. The Copper Industry in 1912. Reviews

The Copper Industry in 1912. Reviews the production and markets, the conditions in the various mining districts and gives related information. 7000 w. Eng & Min Jour—Jan. 11, 1913. No. 38981.

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Increasing the Efficiency of MacDougall Roasters at the Great Falls Smelter of the Anaconda Copper Mining Co. Frank R. Corwin and Selden S. Rodgers. A description of extensive tests and investigations resulting in the final doubling of the roaster capacity. Ills. 13400 w. Bull Am Inst Min Engrs—July, 1913. No. 44023 F.

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Rock House of Quincy Mining Co. T. C. Desoller. Describes methods used in hoisting, dumping, handling and cleaning rock and copper ore at No. 2 mine, Lake Superior. 1700 w. Mines & Min—Jan., 1913. No. 38714 C.

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w. Glückauf — May 10, 1913. N 43006 D.

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Concentration of Slimes at Anaconda, Mont. Ralph Hayden. Shows what efforts have been made to solve the slime problem in the concentrator of the Washoe Reduction Works, where the copper sulphide ores from Butte are treated. Ills. 5500 w. Bul Am Inst of Min Engrs—Aug., 1913. No. 44744 F.

Smelter Flues

The Great Falls Flue System and Chimney. C. W. Goodale and J. H. Klepinger. Describes the new flue system, which cost about \$1,100,000, and includes the largest and highest chimney in the world and other interesting features. Ills. 14500 w. Bul Am Inst of Min Engrs—Aug., 1913. No. 44756 F.

Smelter Fumes

Neutralization of Smelter Gases. George C. Westby. From Jour. of Ind. & Engng. Chem. Gives results of methods with which the writer has experimented. 2500 w. Min & Sci Pr—Oct. 26, 1912. No. 37179.

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Copper Smelting Methods at Bogoslowsk, Peron, Russia. Richard Davey. Describes the nature of the ores, waterjackets, matte, Bessemerizing the power plant, and other items of interest. 1500 w. Inst of Min & Met, Bul 101—Feb. 13, 1913. No. 40219 N.

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Assaving

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The Smelting of Copper Ores in the Electric Furnace. Dorsey A. Lyon and Robert McKeeney. A comparative study of the electric smelting of copper ores and the combustion furnace. Ills. 11500 w. Bul Am Inst of Min Engrs—Aug., 1913. No. 44760 F.

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See also Concentration, Converters and Refining, under Copper.

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Mints. Harold French. Describes methods and gives results obtained. 3000 w.
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How Gold Is Bought. Jesse Simmons. Illustrates and describes the methods of the United States assay office. 2000 w. Sci Am—Nov. 16, 1912. No. 37557.

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Concentration

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Cyanide Solutions

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Dredging

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Cyaniding

The Action of Oxidizers in Cyaniding. Morris Green. Describes investigations carried out which show that a solution of chemically pure potassium cyanide in freshly prepared distilled water dissolves gold more rapidly than an older solution. 3500 w. Jour Chem, Met & Min Soc of S Africa—Feb., 1913. No. 41216 E. Cyaniding Zambona Low-Grade Silver

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Dredging on Butte Creek, California. Lewis H. Eddy. Describes two bucketelevator gold dredges, showing differences

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Gold Fields

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The Secondary Precipitation of Gold in Ore Bodies. Albert D. Brokaw. Experimental study of the precipitation of gold, particularly the conditions under which gold and manganese dioxide may be precipitated simultaneously. 5000 w. Jour of Geology — April-May, 1913. 42329 E.

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The Determination of Gold in the Presence of Iridium and Allied Metals in Materials Such as Black Sand. Two prize papers by James Gray, and by Chris. Toombs. Deals with methods, reporting research work. 5500 w. Jour Chem, Met & Min Soc of S. Africa—July, 1913. No. 45137 E.

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Relation of Faulting and Mineralization in Goldfield. Corbin Barnes and E. A. Byler. Points out the relation be-tween the Columbia Mt. fault and the mineralization of the Goldfield Consolidated, and the Florence mines. 1500 w. Min & Sci Pr-July 12, 1913. No. 43747.

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Montana

ing its history. 2500 w. Queens Gov Min Jour—May 15, 1913. No. 43166 B.

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Grading Analyses and Their Application to Cyanidation, Classification, etc. John W. Bell. Outlines a series of grades proposed by H. Stadler, pointing out applications in connection with Cyanidation and classification. 1600 w. Qr Bul of Can Min Inst — March, 1913. No. 41597 N.

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The Olancho Country. A. D. Akin. An account of the placers, cost of operation, working conditions, natural advantages, etc. 3000 w. Min & Sci Pr—July 12, 1913. No. 43744.

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Launder

Large Reinforced-Concrete Launder. Claude T. Rice. Illustrated description of a launder used at the Baltic mill to carry away the overflow after dewatering the tailings. 1500 w. Eng & Min Jour—July 5, 1913. No. 43482.

Low Grade

Low Costs at Wasp No. 2 Mine. Leroy A. Palmer. Describes successful methods employed in stripping, mining and milling gold ore of very low grade. Ills. 2500 w. Mines & Min—Dec., 1912. No. 38011 C.

Mexico

Historical and Mining Notes of Sonora, Mexico. Claud Hafer. Abstract translations from various sources, describing the resources and their development. 2500 w. Min & Engng Wld—Nov. 16, 1912. No. 37610.

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Mills

The MacNamara Mill ,Tonopah. Illustrated description of a modern little plant that has been in operation for a year. 1200 w. Min & Sci Pr—Jan. 25, 1913. No. 39578.

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The Southern Cross Mine, Georgetown, Mont. Paul Billingsley. Describes the geology, the character of the ore bodies, and development, reviewing the history and discussing the origin of these goldbearing pyritic deposits. Ills. 2500 w. Bul Am Inst of Min Engrs—Sept., 1913. No. 45465 F.

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Ore Deposits

Nevada

Geology of the National Mining District, Nevada. Alexander N. Winchell. Map and illustrated description of the geology, petrography, and ore deposits. Copper, lead, silver and gold are recovered. 5000 w. Min & Sci Pr—Nov. 23, 1912. No. 37917.

The Abnormal Temperatures on the Comstock Lode. Augustus Locke. Gives data and hypotheses as to the source of the heat. 1000 w. Ec-Geol—Sept., 1912. No. 37674 D.

Vein System of the Comstock. Dwight T. Smith. Outline map and description. 1000 w. Eng & Min Jour—Nov. 9, 1912.

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A Study of Ores from Austin, Nev. H. B. Taylor. A descriptive study of the deposits and their origin. Ills. 2500 w. Sch of Mines Qr-Nov., 1912. No. 38558 D.

Operation of the Tonopah Belmont Mine, Nevada. Frederick Bradshaw. Information from the annual report of the company, as to operating costs, ore reserves, retimbering of the shafts, etc. 1600 w. Min & Sci Pr—May 17, 1913.

No. 42301

Ore Deposits of the Prince Consolidated Mines. D. W. Jessup. Describes the geology of this Nevada district, the orebodies and their genesis, nature of the ore, etc. The ores are low-grade, known as iron-manganese ores, and their value lies in their service for fluxing at the smelters. Ills. 1800 w. Min & Sci Pr—May 24, 1913. No. 42510.

Operation of the West End Mill, Tono-

pah. Jay A. Carpenter. Information abstracted from the last annual report. 1600 w. Min & Sci Pr-Aug. 2, 1913.

No. 44224. New Zealand

The Reefton Goldfield, New Zealand. Ernest K. Hall. Describes the main features of the district, the exceptional ore bodies, and some of the problems. 3500 w. Aust Min Stand-Dec. 19, 1912. No. 39763 B.

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The Chontales Mining District; Nicagua. Arthur Feust. Map and illustrated description of these gold and silver mines, their early history, geological features, method of development, etc. 2500 w. Min & Sci Pr—Dec. 7, 1912. No. 38164.

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An Appeal for Co-operation. Walter Henry Prest. Read before the Min. Soc. of Nova Scotia. Urges co-operation in the gold-mining industry. 3000 w. Can Min Jour—Nov. 1, 1912. No. 87277.

Some Characteristics of the Gold Bearing Veins of Nova Scotia. E. Percy Brown. Describes the three classes of veins, pay shoots, enrichments, etc. Ills. 2000 w. Can Min Jour-June 1, 1913. No. 42690.

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The Swastika Gold Area. E. L. Bruce. From the report of the Ontario Bureau of Mines. Describes the topography, geology, deposits and active properties. 3500 Can Min Jour-Jan. 1, 1913. No. 38918.

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Ore Deposits

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The Gold of the Shinarump at Paria. Andrew C. Lawson. Records facts of interest with regard to the Peruvian and Shinarump formations as gold bearing deposits, and gives observations upon the stratigraphy of the section at Paria, Utah. Ills. 4500 w. Ec-Geol—Aug. 1913. No. 44380 D.

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Purification

The Purification of Gold by Means of Nitre. Describes the treatment with nitre, used only for fine gold. 2000 w. Brass Wld—March, 1913. No. 40694.

Queensland

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Silver-Lead

Queensland

The Oaks Rush Goldfield. William H. Rands. Report with a view to advising on the subsidizing of certain mines in order to prove the field to a greater depth. Ills. 3500 w. Queens Gov Min Jour—Nov. 15, 1912. No. 38233 B. Silver Spur Mine, Southern Queensland.

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See also Deep Mining, under Gold and Silver; Engineers, under INDUSTRIAL ECONOMY, and Hygiene, and Ventilation, under MINING AND METALLURGY, Mining.

Refining

Evolution of an Electrolytic Refinery. Harold French. Discusses improved processes introduced in the Federal plants. 5500 w. Min & Sci Pr—Dec. 14, 1912. Serial. 1st part. No. 38307.

Electrolysis of Low Grade Gold Bullion. Theodore W. Bouchelle. Reports experiments in the chemical and electrolytic refining of a low-grade bullion. 2500 w. Eng & Min Jour—Jan. 25, 1913. No. 39379.

Refining at Pittsburgh — Silver Peak Mill. Lyon Smith. Outlines details of operations. Ills. 1000 w. Eng & Min Jour—March 22, 1913. No. 40755.

Reviews of 1912

I. Gold and Silver Production of the World in 1912. A general review. II. Gold and Silver Production in the United States. Review of the year's production and prices. 3500 w. Min & Engng Wld—Jan. 25, 1913. No. 39415.

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Progress in Gold-Silver Ore Treatment During 1912. Alfred James. A review of general tendencies and changes, giving details of practice. Ills. 5000 w. Min & Sci Pr—Jan. 4, 1913. (Special.) No. 38923 C.

Cobalt in 1912. Joseph T. Mandy. Review of the progress at this silver mining camp. 3000 w. Min Jour—Jan. 18, 1913. No. 39468 A.

See also Alaska, and Dredging, under Gold and Silver, and Cyaniding, and Stamp Mills, under Ore Dressing and Concentration.

Rhodesia

Rhodesia. Illustrated review of the mining and metallurgy of the territories of the British S. Africa Co. 1500 w. S African Min Jour—Sept., 1912. (Special.) No. 37863 N.

The Rhodesian Small-worker. R. W. Pringle. Illustrates and describes some of the typical small mines. 3000 w. S. African Min Jour.—Sept., 1912. (Special.) No. 37865 N.

Sampling

The Sampling of Gold-Bullion. Discussion of the paper of Frederic P. Dewey. 1000 w. Bul Am Inst of Min Engrs—March, 1913. No. 40905 F.

School Laboratory Work: Sampling of an Ore Containing Coarse Gold. Charles E. Locke. An account of a recent run in the stamp-mill of the Mass. Inst. of Technology. 1200 w. Bul Am Inst of Min Engrs—March, 1913. No. 40900 F.

Silver

Mineral Hill Silver Field, N. S. W. E. F. Pittman. Describes the deposit which is apparently of considerable volume and richness. 2200 w. Aust Min Stand—Nov. 7, 1912. No. 38107 B.

Silver-Lead

Mining the Prince Consolidated Ores. D. W. Jessup. Describes the shrinkage system employed in mining the large ore body, and the room and pillar system used

IRON AND STEEL

Slimes

for the 18-ft. ore bed. 2800 w. Min & Sci Pr-May 31, 1913. No. 42621.

Slimes

The Evolution of the Round Table for the Treatment of Metalliferous Slimes. Theodore Simons. An historical review of old sliming methods leading up to the present round-table treatment. Ills. 6000 w. Bull Am Inst Min Engrs—July, 1913. No. 44010 F.

South Africa

Some Features of Mining in South Africa. J. Allan Woodburn. Notes on points of general importance in the vari-ous forms of mining. 2500 w. S African Min Jour—Sept., 1912. (Special.) No. 37855 N.

What South Africa Owes to the Mining Industry. David Harris. A history and review of how the country has been built up on the gold and diamond mines. 1000 w. S African Min Jour—Sept., 1912. (Special.) No. 37840 N.

The Pilgrims Rest and Sabie Gold Fields. Arthur W. Hendren Frost. Il-lustrated account of the oldest gold mining center in South Africa. 5000 w. S African Min Jour-Sept., 1912. (Special.) No. 37866 N.

Mining in Swaziland. Allister M. Miller. History and review of the tin and gold prospects. 2000 w. S African Min Jour-Sept., 1912. (Special.) No. 37849 N.

Government Gold Mines in South Africa. A Cooper Key. Explains the scheme adopted of letting the Crown lands for mining. 1200 w. Eng & Min Jour— Jan. 4, 1913. No. 38809.

South Dakota

Mining at the Wasp No. 2, in the Black Hills, South Dakota. Jesse Simmons. Illustrated description of methods of mining and milling low-grade ore. 1500 w. Eng & Min Jour-Jan. 4, 1913. No. 38806.

Sulphide Ores

On the Behavior of Cold Acid Sulphate Solutions of Copper, Silver, and Gold with Alkaline Extracts of Metallic Sulphides.

Frank F. Grout. Gives experiments designed to indicate the natural process by which secondary sulphides of the metals may be precipitated. 8000 w. Ec-Geol—Aug., 1913. No. 44379 D.

Alabama

Tonopah

Metallurgy at Tonopah. M. W. von Bernewitz. Describes interesting treatment methods at this mining center of Nevada. Ills. 2500 w. Min & Sci Pr— Dec. 28, 1912. No. 38766.

Transvaal

Past, Present and Future of Mineral Exploration in the Transvaal. Oliver King. Illustrated review. 4000 w. S African Min Jour-Sept., 1912. (Special). No. 37868 N.

The Messina (Transvaal). Development Co., Ltd. J. M. Calderwood. Reviews the history, describing the develop-ment and mining methods. 2500 w. S African Min Jour-Sept., 1912. (Special) No. 37857 N.

Veins

Artificial Vein-Formation in the Tomboy Mill, Telluride, Colo. J. F. Kemp. A study of formations around the drain pipes that had been buried beneath a layer of concentrate. Ills. 1500 w. Ec Geol—Sept., 1913. No. 45825 D.

Witwatersrand

Origin of the Auriferous Conglomerates on the Witwatersrand. Richard

ates on the Witwatersrand. Kichard Beck. Discusses the four principal theories advanced. 1600 w. Min & Sci Pr— May 10, 1913. No. 42081. The Witwatersrand Gold Industry in 1912. W. L. Honnold. Report of average working cost, profit, financial policy, etc. 1800 w. Min & Sci Pr—Aug. 2, 1913. No. 44222

1913. No. 44222.

Yukon

The Development and Problem of the Yukon. Henry M. Payne. Outlines the general characteristics of the region, the processes by which the gold is removed, and some of the problems to be solved. 4000 w. Qr Bul of Can Min Inst— March, 1913. No. 41599 N.

IRON AND STEEL

Agglomeration

Modern Process in the Agglomeration of Iron Ores (Les procédés modernes d'agglomération des minerais de fer). Henry Martin. This issue describes methods with the addition of foreign material, and briquetting. Ills. Serial. 1st part. 4500 w. Genie Civil—Feb. 15, 1913. No. 40593 D.

Enriching, Briquetting and Agglomerating Iron Ores and Flue Dust (Anreichern, Brikettieren und Agglomerieren von Eisenerzen und Gichtstaub). A Weiskopf. A summary of binding methods and materials used in large European and American steel works. Serial. 1st part. 4200 w. Stahl u Eisen—Feb. 13, 1913. No. 40502 D.

Alabama

Progress in Steel Making in Alabama. Frank H. Crockard. A chapter from "Iron Making in Alabama." Considers

IRON AND STEEL

Analysis

features of the duplex process as followed at the Ensley works. 3500 w. Ir Age -Dec. 19, 1912. No. 38277 C.

Allotropy

On Allotropy in General and That of Iron in Particular. Prof. Carl Benedicks. Explains what is meant by allotropy and what types are considered possible, reporting experimental determina-tions. 8000 w. Ir & St Inst—Sept., 1912. No. 45200 N.

The Allotropic Transformations of Iron. Albert Sauveur. Read before the Iron & Steel Inst. Critical review of views of Carl Benedicks, given in a paper "On Allotropy in General and That of Iron in Particular." 2000 w. Ir & Coal Trds Rev—Sept. 5, 1913. No. 45192 A.

Alloys

Influence of Sulphur on the Stabilty of Iron Carbide in the Presence of Silicon. W. H. Hatfield. Gives results of some experiments made to determine the manner in which sulphur affects the stability of iron carbide. Ills. 5500 w. Ir & St Inst—May, 1918. No. 42241 N.

Alloy Steels

Determination of Manganese in Mild Steels and Pig Iron by Means of the Smith Ferric-Sulphate Tests (Die Manganbestimmung im Flusseisens und Roheisens nach dem Persulfatverfahren von Smith). H. Kunze. Describes process and outlines modifications suggested by the other experiments. Discussion. 3000 w. Stahl u Eisen-Nov. 14, 1912. No. 88406 D.

Manganese Steel for Machinery Parts. S. R. Stone. Gives examples showing a variety of service in which such castings have been used to advantage, and applications in iron and steel works equipment. Ills. 2500 w. Ir Age-Jan. 9, 1913.

No. 38916 C.

Heat Treatment of Chrome Vanadium Steel. A. F. Mitchell. Deals particularly with the heat treatment of alloyed steels, discussing methods and tests. General discussion. Ills. 8500 w. Pro Ry Club of Pittsburgh — Dec. 19, 1912. No. 39938 C.

Titanium as Used in Steel Making. E. F. Lake. Information concerning metallic titanium and the benefits from its use in steel-making processes. 4000 w. Met & Chem Engng — March, 1913.

Metallography and High Speed Steel. Oliver W. Storey. Reviews briefly the development of high speed steels, their composition, treatment, etc. 1200 w. Wis Engr-March, 1913. No. 41573 C.

The Practical Use of the Iron-Carbon Equilibrium Diagram, with Special Reference to the Critical Points A 1, 2, 3; and the Burning of Steel. J. E. Stead. Explanations of changes and of the equilibrium diagram, and its use, with notes on the heat treatment of steel. Ills. 14000 w. Trans N-E Coast Inst of Engrs & Shipbldrs—March, 1913. No. 41699 N. See also Corrosion, under Electrical Engineering, Electro-Chemistry.

Analysis

Effect of Carbon on Quality of Charcoal Iron. J. E. Johnson, Jr. From a paper read at Cleveland meeting of the Am. Inst. of Min. Engrs. Gives results of an investigation of L. Superior charcoal irons; differences between analyses and physical properties and causes of spotted iron. Ills. 4500 w. Ir Trd Rev-Nev. 21, 1912. No. 87719.

Method for the Rapid Determination of Total Carbon in Iron, Steel, Cast Iron and in the Iron Alloys. H. de Nolly. Describes a method which has all the advantages of the dry method and, from the point of view of rapidity, is superior to the Eggertz calorimetric process. Ills. 1800 w. Am Found Assn—Dec., 1912. No. 39518 N.

New Method of Determining Sulphur in Pig Iron and Steel (Eine neue Schwefelbestimmung in Roheisen und Stahl). A. Vita and C Massenez. Method and apparatus for fairly accurate, rapid analyses. Ills. 1000 w. Stahl u Eisen—Dec. 12, 1912. No. 39000 D.

The Technical Analysis of Ferrovana-

dium and Its Products. William W. First of a series of articles on the determination of the different constituents. The present number deals with aluminum. Met & Chem Engng-Feb.,

 1913. Serial, 1st part. No. 39686 C.
 Determination of Oxygen in Iron & Steel. R. H. McMillen. Explains the the determination of aluminum. 1200 w. application of the electric resistance furnace to a modification of the Ledebur method. Ills. 1500 w. Ir Age—Jan. 30, 1913. No. 39587 C.

A New Method for the Accurate Determination of Phosphorus. C. H. Ridsdale and N. D. Ridsdale. Briefly reviews the leading ordinary methods and describes the new "mechanicalized" method. 2500 w. Ir & St. Inst-May, 1913. No.

42246 N.

The Volhard-Wolff Volumetric Man-ganese Determination (Ueber die massanalytische Manganbestimmung nach Volhard-Wolff). A report issued by the Chemical Commission of the German Iron Foundrymen's Association. 7000 Stahl u Eisen — April 17, 1913. No. 42109 D.

Blast Furnace Gases

Determination of Oxygen in Iron and Steel. William R. Fleming. Explains the shortcomings of the Ledebur method and its modifications. Ills. 2500 w. Ir Age—June 26, 1913. No. 43240 C.

Determination of Chromium in Steel.

Frank Garrett. Gives a colorimetric method for the determination of chromium in steel, particularly suited to small percentages. 1500 w. Ir Age—April 10, 1913. No. 41153 C.

The Determination of Vanadium in Ferro-Vanadium. William W. Clark. Comments on methods used and description of a method found to be accurate under all conditions and on all varieties of work. 2500 w. Met & Chem Engng— April, 1913. No. 41045 C.

Determination of Phosphorus in Steels Containing Vanadium. J. R. Cain and F. H. Tucker. Gives results of experimental investigations. 11 pp. Papers of Bureau of Stand-No. 24. No.

43336 N.

Method for the Rapid Determination of Total Carbon in Iron, Steel, Cast-Iron, and in the Iron Alloys. H. de Nolly. Read before the Int. Assn. for Test. Mat. Describes a method having all the advantages of the dry method, and, from the point of view of rapidity, is superior to the Eggertz calorimetric process. Ills. 1500 w. Chem Engr—July, 1913. No. 1500 w. 43860 C.

Analyzed Iron and Manganese Ores-Methods of Analysis. Gives methods of analysis at the Bureau of Standards, and methods used by other analysts. 8000 w. Bureau of Stand—Circ No. 26. No.

44739 N.

Analyzed Irons and Steels—Methods of Analysis. Gives methods for irons and ordinary steels, and methods for special alloy steels. 5800 w. Bureau of Stand— Circ. No. 14. No. 44738 N.

Determination of Oxygen in Iron and Steel. Describes methods of estimation followed in recent investigations. w. Ir Age-Aug. 7, 1913. No. 44201 C.

Annealing

The Influence of Divorcing Annealing on the Mechanical Properties of Low-Carbon Steel. Henry M. Howe and Arthur G. Levy. Reports an investigation made to determine whether the structural change which occurs in the slow cooling of steel below the transformation range has an important effect on its engineering properties. Ills. 9000 w. Bul Am Inst of Min Engrs-Jan., 1913. No. 89443 F. Belgium

Historical Survey of the Metallurgy of Iron in Belgium. Baron E. De Laveleye. Read before the Iron & Steel Inst. An

interesting review. 9500 w. Ir & Coal Trds Rev—Sept. 5, 1913. No. 45182 A.

Bessemer Process

The Bessemer Process at Königshütte (Das Bessemerwerk der Königshütte). Hermann Illies. A historical review in commemoration of the 100th anniversary of the birth of Henry Bessemer. Ills. Stahl u Eisen-Feb. 6, 1913. 4900 w. No. 40504 D.

Bessemer Steel

Starting Bessemer Steel Making in merica. Robert W. Hunt's speech of acceptance of John Fritz medal for 1912. 1500 w. Ir Age—Dec. 12, 1912. No. 38167 C.

Blast-Furnace Gases

Cleaning Blast-Furnace Gases (Epuration des Gaz de Haute-Fourneaux). A. Gouvy. Presents designs of gas-cleansers for preliminary, primary and secondary degrees of cleaning, with examples of actual design. Ills. 1100 w. Rev de Metall—Oct., 1912. No. 87497 H.

Determining Heat-Value of Blast Furnace Gas. J. F. Mowat. Explains how the three factors necessary for making calculations are obtained by the use of Ir Trd Rev-Jan. 2, curves. 1500 w. No. 38738 D. (Special.)

1913. Modern Practice in Cleaning Blast-Furnace and Other Gases. H. Stone-wall Jackson. Abstract of a paper read before the Cleveland Inst. of Engrs. Describes methods adapted at different plants. 3000 w. Ir & Coal Trds Rev— April 11, 1913. No. 41398 A.

Blast-Furnace Gas as a Heat Medium In Foundries and Drying Rooms (Hochofengas als Heizmittel für Giessereien und Trockenkammern). Paul Zimmermann. Suggestions and plans for heating by this waste fuel. Ills. Giess Zeit—April 1, 1913. No. 41426 D.

The Theoretical Effect of Increasing the Oxygen of the Blast Supplied to Blast Furnaces. Charles A. Edwards. Read before the Cleveland Inst. of Engrs. Re-ports an investigation of the net theoretical effect of increasing the oxygen of the blast in blast furnaces. Discussion. 5000 w. Ir & Coal Trds Rev—Jan. 17, 1913. No. 39490 A.

Studies on the Prevailing Conditions Between Iron Ore and Gases in Blast Furnaces (Studien über die im Hochofen zwischen den Eisenerzen und Gasen ob-waltenden Verhältnisse). Norbert Metz. A study of the chemical reactions occurring in the blast furnace. Ills. and charts. Stahl u Eisen-Jan. 16, 1913. 6300 w. No. 40005 D.

The Value of Blast-Furnace Gases (Die Bewertung von Hochofengasen). H. Tha-

Blast Furnaces

ler. Studies on the available heat energy in flue gases. 2800 w. Oest Zeit f Berg u Hütten—Feb. 8, 1913. No. 40509 D. Dust Determination for Blast-Furnace

Gas. Everard Brown. Explains several methods employed. Ills. 1500 w. Power—May 13, 1913. No. 42017.

Purification of Blast-Furnace Gas by the Schwarz-Bayer Process (Die Hoch-ofengasreinigung nach der Verfahren Schwarz-Bayer). Fritz Häring. Brief description of the claims for this process, and the disintegrator forming the essential element. Ills. 1000 w. Stahl u Eisen—April 17, 1913. No. 42110 D.

Automatic Gas Regulation in Metallurgical Practice (Selbsttätige Gasregelung in Hüttenbetrieben). Immo Glenck. Details of a pressure regulator applied to Cowper, Martin, and other furnaces. Ills. 3000 w. Stahl u Eisen—May 8, 1913. No. 43001 D.

The Purification of Blast Furnace Gases. A report of a paper by C. Herwegh, giving data on the use of the Feld washer in French blast furnace practice. Also details of a proposed American installation. Ills. 4000 w. Met & Chem Engng—July, 1913. No. 43488 C.
The Utilization of Blast-Furnace and

Coke-Oven Gases in Metallurgy. E. Houbaer. Reviews the practical applications of these two gases to metallurgy, especially their employment for heating metal mixers, open-hearth furnaces, and reheating furnaces. Ills. 10000 w. I Steel Inst, No. 9—Sept., 1913. 45094 N.

The Cleaning of Blast Furnace Gas. W. A. Forbes. Shows the advantages of cleaning blast-furnace gas where dusty gases are produced, and describes the various systems by which the cleaning can be accomplished. Ills. 9000 w. Bul. Am Inst of Min Engrs—Oct, 1913. No. 46351 F.

See also Gas Firing, under MECHANI-CAL ENGINEERING, Steam Engineering and Gas Engines, under MECHANICAL Engineering, Combustion Motors.

last-Furnace Practice

See Chip Briquetting, under MECHANIC-AL ENGINEERING, Machine Works and Foundries.

Blast Furnaces

Novel Type of Blast Furnace Construction. J. E. Johnson, Jr. Describes the design and construction of structural steel framework supported by four steel celumns for carrying the weight of the entire furnace. Ills. 2200 w. Ir Trd Rev

Nov. 7, 1912. No. 37323.

Blowing-In a Blast Furnace. R. H.

Sweetser. An account of a blowing-in

practice where the results are sure, safe and satisfactory. Ills. 2500 w. Bul Am Inst of Min Engrs-Nov., 1912. No. 37894 F.

Developments in the Preparation of Iron Ores. J. W. H. Hamilton. Read before the Am. Ir. & St. Inst. Discusses the processes employed to increase the iron content of the blast furnace burden and the utilization of fine ores and flue 5500 w. Ir Trd Rev-Nov. 28, 1912. No. 37931.

New Blast Furnaces of the Maryland Steel Co. Drawings and description of the general arrangement of blast furnace "A" and details of design. 1500 w. Ir Trd Rev—Jan. 23, 1913. No. 89320.

Means of Preventing Outbreaks of Iron in Blast Furnaces (Ueber Mittel zur Verhütung von Roheisendurchbrüchen bei Hochofen). R. Kunz. Presents modified design of blast furnaces to overcome this tendency. Discussion. Ills. 6800 w. Stahl u Eisen — Jan. 23, 1913. No. 40008 D.

The Caen Blast Furnaces (Les hauts-fourneaux de Caen). Robert Le Chatelier. A review of the general conditions in this steel region of France. Maps. 4500 w. Rev de Metal-Feb., 1913. No. 40076 $\mathbf{E} + \mathbf{F}$.

New Type of Blast-Furnace Construction. J. E. Johnson, Jr. Critical discussion of blast-furnace construction, with description of a design. Ills. 3500 w. Bul Am Inst of Min Engrs—March, 1913. No. 40891 F.

The Blast-Furnaces and Steel Works at Caen (Les hauts fourneaux et aciéries de Caen). A study of the mineral formation of the district, the arrangement of plants and types of furnaces. Ills. 5500 w. Genie Civil — March 1, 1913. No. 40598 D.

Blowing-in a Blast-Furnace. Discussion of the paper of R. H. Sweetser. 3500 Bul Am Inst of Min Engrs-May, 1913. No. 42464 F.

The Caen Blast-Furnace Plant. Brief review of the history and illustrated description of the plant. 2000 w. Ir & Coal Trds Rev — April 25, 1913. No. 41935 A.

Thermo Economics of Blast Furnaces; Their Dependence Upon Convertible Reduction Processes, and Their Calculable Thermo-Dynamic Free Formative Energy (Die Thermoökonomie des Eisenhochofens, ihre Abhängigkeit von den umkehrbaren Reduktionsprozessen und deren thermodynamisch berechenbaren freie Bildungsenergien). L. P. Friedrich. Mathematical discussion with diagrams.

Cast Iron

5000 w. Feuerungs-May 1, 1913. No. 42129 D.

The Development of Blast-Furnace Construction at the Boston & Montana Smelter. J. A. Church. Early furnaces; experiments with high-shaft, wide, and extreme bosh furnaces; the 56 by 180 inch furnace, and recent experiments. Ills. 8500 w. Bull Am Inst Min Engrs—July, 1913. No. 44022 F.

Thermal Effect of Blast-Furnace Jackets. Robert P. Roberts. An account of a series of tests at Great Falls, Mont., and tabulated results. Ills. 9000 w. Bull Am Inst Min Engrs-July, 1913. No. 44021 F.

Lowering Furnace-Flux Costs. C. A. Tupper. Illustrates and describes a plant designed to secure the highest efficiency. 2500 w. Min & Engng Wld—June 28, 1913. No. 43318.

Developments in Lining Blast Furnaces. C. A. Tupper. Explains the advantages of thin-lined, water-cooled furnaces. Ills. 2500 w. Ir Trd Rev-Sept. 4, 1918. No. 44952.

On the Use of Oxygen in Blast-Furnace Practice. Gustave Trasenster. Brief ac-count of the experiments made by the Ougrée-Marihaye Company. 1200 w. Iron & Steel Inst, No. 17—Sept., 1918. No. 45096 N.

Reinforced Pile Foundations for Blast Furnaces. Armand Baar. Read before the Iron & Steel Inst. Brief description of a new system known as Franki piles. Ills. 1000 w. Ir & Coal Trds Rev—Sept. 5, 1913. No. 45186 A.

Researches on Blast-Furnace Phenomena (Untersuchungen über die Vorgänge im Hochofen). W. Mathesius. A study of the chemical reactions occurring within the furnace. Diagrams. Serial, 1st part. 5200 w. Stahl u Eisen—Sept. 4, 1913. No. 45381 D.

The Use of Nodulized Ore in the Blast Furnace. Richard Henry Lee. Discusses important points in working blast furnaces on nodulized ore. 3300 w. Bul Am Inst of Min Engrs-Oct, 1913. No. 46352 F.

The New Blast Furnace at Port Colborne, Ont. Brief illustrated description of the new furnace at the Lake Eric entrance of the Welland Canal. 1500 w. Ir Age-Oct. 2, 1913. No. 45599 C.

See also same heading, under Lead and Zinc.

Blast-Furnace Slags

The Effect of Alumina in Blast-Furnace Slags. Discussion of the paper of J. E. Johnson, Jr. 4000 w. Bul Am Inst of Min Engra—Dec., 1912. No. 38376 F.

Blast-Furnace Slag-Analyses for 24 Hours. F. L. Grammer. Gives a comparative record of a day's run of furnaces on basic and Bessemer irons, with notes. 500 w. Bul Am Inst of Min Engrs—March, 1913. No. 40901 F.

The Value of Blast-Furnace Slag (Die

Verwertung der Hochofenschlacke). E. Elwitz. The production of cement from slag and its application. Ills. 2100 w. Glückauf—May 31, 1913. No. 43009 D.

Blowing Engines
2000 H. P. Gas-Driven Blowing Engine (2000-PSe Gasgebläsemaschine). Eduard Kaschny. Data on machine erected by the Maschinenfabrik Augsburg-Nürnberg. Ills. & Plate. 2200 w. Elek Rund—Dec. 12, 1912. No. 39055 D.

Canada

Moose Mountain Iron Mine. F. A. Jordon. Describes the ores and deposits, giving an account of the development. 3000 w. Can Min Jour—Dec. 1, 1912. No. 38043.

The Production of Iron and Steel in Canada During the Calendar Year 1911. John McLeish. Advance chapter from annual report on the mineral production of Canada. 8500 w. Can Dept of Mines No. 39539 N. -No. 182.

The Undeveloped Iron Resources of Canada. A. B. Willmott. Discusses the types of iron ore deposits, and describes the various deposits of the different provinces. 6500 w. Jour Can Min Inst—Vol. XIV. No. 42026 N.

Cast Iron

Malleable Cast Iron and the Open Hearth Furnace. G. A. Blume. Briefly reviews changes that have produced astonishing results and discusses the experience of the author with open hearth furnaces. Ills. 7000 w. Am Found Assn—Dec., 1912. No. 38621 N. The Cleansing Effect of Titanium on

Cast Iron. Bradley Stoughton. Gives results of research and of a series of tests upon the effect of titanium on steel

castings. Also discussion. 7000 w. Am Found Assn—Dec., 1912. No. 38613 N. The Production of "Inside Chill" and the Hardening of Cast Iron by Air Blasts (Die Erzeugung "umgekehrten Hart-gusses" und die Härtung von Gussstücken durch Gebläseluft). Bernhard Osann. Discusses the papers by Thos. D. West read before the Am. Soc. of Mech. Engrs. Ills. 2100 w. Stahl u Eisen—Oct. 31, 1912. No. 38401 D.

The Constitution of Cast-Iron and the Effects of Superheated Steam. William Campbell and John Glassford. amination of corroded cast-iron from a super-heater showed that the metal had

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become oxidized following the planes of the graphite flakes. Gives results of ex-5000 w. Am Found periments. Ills. No. 39522 N. Assn—Dec., 1912.

Typical American Uses of Cast-Iron, and Test Methods Applicable to Them. John Jermain Porter. Read before the Int. Assn. for Test. Mat. Discusses characteristics, uses and the properties needed, and tests necessary. 3000 w. Chem Engr—Dec., 1912. No. 38819 C.

New Method for Mechanical Tests on Cast-Iron. C. Frémont. Compares different methods of applying mechanical tests, presenting results of supplementary tests. 1500 w. Am Found Assn—Dec., 1912. No. 39525 N.

Cleansing Effect of Titanium on Cast Iron. Bradley Stoughton. Read before the Am. Found. Assn. Reports researches showing that titanium introduced into cast iron does not produce an alloy until fixed percentages are exceeded. 2000 w. Ir Trd Rev—Feb. 20, 1913. No. 39963.

Notes on Cast-Iron. Albert Sauveur. Notes, suggested by J. E. Johnson's pa-per, on the physical properties of castiron vs. its ultimate composition, etc. Ills. 6000 w. Bul Am Inst of Min Engrs-March, 1913. No. 40904 F.

Cast-Iron. Discussion of the paper of J. E. Johnson, Jr., and of the paper of Albert Sauveur. Ills. 8500 w. Bul Am Inst of Min Engrs — May, 1913. No. 42467 F.

The Influence of the Metalloids on the Properties of Cast-Iron. H. I. Coe. Describes research work dealing with the effect of metals not usually present in castiron or the iron carbon alloys, to ascertain by comparison the utility of adding these materials to cast-iron. Ills. 3000 w. Ir & St Inst — May, 1913. No. 42237 N.

The Numerical Classification of Cast Iron Seems Insufficient—A Chemical Classification (Classification numérique des fontes de moulage son insuffisance—Classification chimique). Th. Gueneau. proposed French classification as hematite, common foundry, basic and special cast iron. 3000 w. Rev de Metall—Aug., 1913. No. 45315 H.

Cast Iron and Malleable Iron (Fonte et fonte malléable). W. H. Hatfield. An examination of these materials from a microscopical point of view. Plate. 8000 Rev de Metall-Aug., 1913. 45319 H.

Notes on the Investigation of Cast Iron (Beitrag zur Untersuchung des Gussei sens). C. Jüngst. A review of experi mental methods to be followed in making tests. Ills. 3000 w. Stahl u Eisen—Aug. 28, 1913. No. 45379 D.

Cast Iron Specifications and Inspection. R. S. McPherran. A plea for uniformity. 800 w. Am Found Assn—Oct, 1913. No. 46258 N.

Calculating Mixtures for Malleable Cast Iron. Harrold Hemenway. Gives a rapid and easy method for figuring the heats. 2500 w. Foundry—Oct, 1913. Special. No. 45711 C.

The Changes in Volume of Cast Iron under Heat and Its Application (Die Volumenanderung des Gusseisen in Wärme und Nutzanwendungen). A. Messerschmitt. Studies and tables on the amount of expansion and the uses to which this expansion may be placed. Serial, 1st part. 2500 w. Giess Zeit— Oct. 1, 1913. No. 46024 D.

See also Castings, under MECHANICAL ENGINEERING, Machine Works and Foun-

dries.

Charcoal-Iron

The Effect of High Carbon on the Quality of Charcoal-Iron. J. E. Johnson, Jr. Briefly reviews the commercial conditions governing the charcoal-iron industry, explains its quantitative importance and the factors that affect the quality. Also discussion. Ills. 1400 w. Bul Am Inst of Min Engrs — Feb., 1913. No. 40155 F.

The Tofo Iron Mines in Coquimbo, Chile. Information concerning the character and extent of the deposits and methods of working and shipping. 1200 w. Ir Age—Feb. 13, 1913. No. 39838 C.

The Extent of the Chilian Iron Ore Deposits. Analyses of the Chilian ores and information concerning the different provinces. 3000 w. Ir Trd Rev—Feb. 20, 1913. No. 39962.

Iron Ore Resources of Chili. Part II. Charles Vattier and Nicomedes Echegarai. A continuation of a paper read last year before the Iron & Steel Inst., giving a report of recent investigations. 7000 w. Ir & Coal Trds Rev—Sept. 5, 1913. No. 45193 A.

Native Iron and Steel Practice in China. Albert B. Middleton. Reports results of research work on materials and samples. 1800 w. Ir & Coal Trds Rev— May 23, 1913. No. 42762 A. The Tayeh Iron Mine, China. Kimio

Remarks on the effects of Nishizawa. Chinese revolutions on the mining industry. and of foreign loans, with history and description of the Tayeh iron mine. 3000 w. Jour Soc of Arts-Oct. 10, 1913. No. 45966 A.

Chrome

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Chrome

The World's Chrome Mines. Information concerning the deposits, the uses of the ore, and matters related. 1500 w. Min Jour—Oct. 11, 1913. No. 45978 A.

Concentration

The Concentration of Iron Ores. N. V. Hansell. Deals with the various methods at present commercially used in the United States, showing the present status of the art and the possibilities for further development. Ills. 7500 w. Bul Am Inst of Min Engrs—Dec., 1912. No. 38372 F.

The Concentration of Iron-Ores. Discussion of the paper by N. V. Hansell. 2000 w. But Am Inst of Min Engrs—May, 1913. No. 42463 F.

Concentrator

An Iron Concentrator of Unusual Design. L. O. Kellogg. Describes a concentrating plant in the Hudson Highlands employing permanent magnets which deflect the iron from a falling curtain of ore. Ills. 1500 w. Eng & Min Jour—Aug. 9, 1913. No. 44246.

Converters

Converter for Melting Iron and Blowing Steel. Illustrated description of the first American installation of the stock oil-fired converter for making steel for castings. 1800 w. Foundry—Jan., 1913. No. 38708.

A Two-Piece Small Type Converter. A. F. Blackwood. Illustrated description of a two-piece converter, which saves time in making repairs. 1500 w. Ir Age—Jan. 30, 1913. No. 39585 C.

Corrosion

The Corrodibility of Nickel, Chromium, and Nickel-Chromium Steels. J. Newton Friend, Walter West, and J. Lloyd Bentley. Gives results of experiments in which samples were exposed to corrosive influences for six months. 2200 w. Ir & St Inst—May, 1913. No. 42239 N.

Ir & St Inst—May, 1913. No. 42239 N.
The Influence of Silicon on the Corrosion of Cast-Iron. J. Newton Friend and C. W. Marshall. Report of experimental tests and discussion of results. 1000 w. Ir & St Inst—May, 1913. No. 42240 N.

Crucible Steel

The Manufacture of Crucible Steel. John Howe Hall. Brief review of the history and processes, describing the furnaces, pouring and casting, etc. Ills. 3000 w. Ir Trd Rev—April 3, 1913. Serial. 1st part. No. 41061.

Cuba

The Vast Ore Deposits of Cuba. Henry Hale. Information conerning the deposits of iron, accessible without tunneling or shafting, aggregating 500,000,000

tons or more. Ills. 1500 w. Sci Am—Aug. 23, 1913. No. 44498.

See Ore Deposits, under Iron and Steel.

Cupola Furnaces

Fuel-Efficiency of the Cupola Furnace. John Jermain Porter. Indicates the laws governing the fuel-economy of the cupola, and examines the feasibility of some of the proposals for increasing its fuel-economy. 2500 w. Bul Am Inst of Min Engrs—Feb., 1913. No. 40158 F.

Experimental Investigations of Cupola Furnace Melting Processes (Experimentelle Untersuchung des Kupolofen-Schmelzprozessen). Fried. Hüser. Studies of the gas and temperature conditions in these furnaces. Ills. 5600 w. Stahl u Eisen—Jan. 30, 1913. No. 40009 D.

Cupolas

Studies of the Cupola Melting Process. From a paper by Dr. F. Hüser, in Stahl und Eisen. Tests of iron and slag were taken at intervals throughout the operation. Ills. 1200 w. Ir Age—March 27, 1913. No. 40888 C.

Desulphurization

The Desulphurization of New Jersey Iron Ore. Describes an adaptation of the wedge kiln, used for roasting copper ores, to the desulphurization of Eastern iron ores. Ills. 1800 w. Ir Tr Rev—Jan 30, 1913. No. 39588.

The Desulphurization of Iron, Laws and Their Application (Die Entschwefelung des Eisens, ihre Gesetze und deren Anwendung). W. Heike. A statement of the laws and practical means for obtaining the desired results. Serial. 1st part. 3000 w. Stahl u Eisen—May 8, 1913. No. 43000 D.

Dry Blast

The Story of the Dry-Blast Process. James Gayley. Address on the occasion of the presentation of the Perkin medal. 4500 w. Met & Chem Engng—Feb., 1913. No. 39680 C.

The Gayley Dry Blast Process. Henry M. Howe. Extracts from the address made at the presentation of the Perkin medal to Dr. James Gayley, 2200 w. Met & Chem Engng—March, 1913. No. 40333 C.

The Economy of Dry Blast. Josef von Ehrenwerth. Reviews results obtained in research work. 2500 w. Ir & St Inst—May, 1913. No. 42238 N.

The Gayley Dry Blast Process. Oliver W. Storey. A sketch of Mr. Gayley's life and the development of the process. 2000 w. Wis Engr—Oct, 1913. No. 46312 C.

Efficiency-Records

The Utility of Efficiency-Records in the Manufacture of Iron. John Jermain

Electric Furnaces

IRON AND STEEL

Electrometallurgy

Porter. Gives some examples of efficiency-reports as applied to blast-furnace operations. 3000 w. Bul Am Inst of Min Engrs—April, 1913. No. 41656 F.

Electric Furnaces

The Status of the Electric Steel Furnace. Wilfred Sykes. Read before the Assn. of Iron & Steel Elec. Engrs. Discusses various furnaces and their future development. The arc type is considered preferable from an operating standpoint. 3000 w. Ir Age—Oct. 16, 1913. No. 45915 C.

Electric Furnace Heat-Treatment of Steel. E. F. Lake. Illustrates and describes the arrangement of the electric furnace, discussing the effect of different elements absorbed by heated steel. 3500 w. Mach, N Y—Oct, 1913. No. 45607 C. The Frick Floatric Steel Industric

The Frick Electric Steel Induction Furnace. Reports results achieved at the Krupp plant at Essen, comparing with other furnaces and considering the future of the electric furnace. Ills. 4000 w. Ir Age—Oct. 2, 1913. No. 45600 C.

Induction-Furnace Notes. Joh. Härdén. Gives details and readings on an induction-furnace plant, as an example of what can be done in this class of furnaces when used for high-class crucible steel making. 3500 w. Met & Chem Engng—Oct, 1913. No. 45780 C.

The Induction-Furnace for Crucible

The Induction-Furnace for Crucible Steel-Making. John Härdén. Notes of details and readings on an induction furnace plant given as an example of what can be done in this class of furnaces. 4000 w. Ir & Coal Trds Rev—Oct. 3, 1913. No. 45871 A.

The Induction Furnace and Its Use in the Manufacture of Steel. Albert Hiorth. Describes the furnace invented by the author and gives data. Ills. 3000 w. Am Found Assn—Oct., 1913. No. 46263 N.

A Canadian Electric Steel Furnace. T. R. Loudon. Illustrated description of the plant. 1500 w. Can Engr—Oct. 23, 1913. No. 46191.

Advances in the Construction and Operation of Electric Blast Furnaces (Fortschritte im Bau und Betrieb elektrischer Hochöfen). W. Rodenhauser. Description of the types introduced during the past year. Ills. 5000 w. Elek Kraft u Bahnen—Sept. 24, 1913. No. 46093 D.

Electric Power

The Use of Electric Power in Steel Mills. Stewart C. Coey. Read before the Am. Ir. & St. Int. Gives a comparison of methods of production and distribution and discusses the question of alternating or direct current motors. Discussion.

5000 w. Ir Age—Oct. 31, 1912. No. 87747 C.

The Selection and Care of Electrical Machinery in Steelworks. J. Arthur Sykes. Discusses care necessary to maintain efficient service under such hard conditions. Ills. 6000 w. Elect'n, Lond-

Dec. 13, 1912. (Special.) No. 38849 D.
Electric Control Gear for Iron and Steel
Works. J. M. L. Slater, and F. C. Hall.
Discusses power station switchboards and
control gear for blast furnace hoists, reversing mills, continuous mills and auxiliaries. 7500 w. Elect'n, Lond—Dec. 13,
1912. (Special.) No. 38848 D.

Types of Motor for Steel Mill Auxiliaries. B. R. Shover and E. J. Cheney. From a paper before the Assn. of Ir. & St. Elec. Engrs. The factors to be considered in deciding the system to be used. 3500 w. Ir Trd Rev—Jan. 23, 1913. No. 39319.

Electricity in Iron and Steel Mills. Considers the advantages, cost, applications, etc. Ills. 6000 w. Elec Rev & W Electr'n—Feb. 22, 1913 No. 39991.

Electricity in Iron and Steel Industry. J. E. Dalemont. Discusses briefly the recent consumption of blast furnace gas in gas engines, and the direct drive of reversible rolling mills by electric motors. Ills. 1000 w. Can Engr—March 13, 1913. No. 40680.

See also Cranes, under MECHANICAL ENGINEERING, Transporting and Conveying, and Rolling Mills, under Iron and Steel.

Electrolytic Refining

Electrolytic Production of Iron Sheets and Tubes, Etc. Wilhelm Palmer and J. A. Brinell. Gives results of a study of the S. Cowper-Coles electrolytic method for producing iron sheets and tubes, etc. 6500 w. Met & Chem Engng —April, 1913. No. 41046 C.

Electrometallurgy

Electric Iron-Smelting at Trollhättan. Deals especially with the chemical side of the problem. 6000 w. Engng—Nov. 8, 1912. No. 37638 A.

Iron and Steel Smelting in Electro-Metals Furnaces. T. D. Robertson. Discusses electrical iron ore reduction and describes the electro-metals steel-refining furnace. 6000 w. Elect'n, Lond—Dec. 13, 1912. (Special.) No. 38857 D.

Tool Steel from Titaniferous Magnetite by Evans-Stansfield Electric Furnace Process. J. W. Evans. An account of the development of the process, the results, and costs. 1500 w. Jour Can Min Inst—Vol. XV. No. 42087 N. Extension of Hydro-Metallurgical In-

Extension of Hydro-Metallurgical Industries. Baxeres de Alzugaray. Discusses the application of hydrometallur-

Hardening

gical methods to the extraction of metals. 2500 w. Min & Engng Wld—May 17, 1913. No. 42233.

Electric Steel Manufacture from an Industrial Viewpoint (Die Elektrostahl-Erzeugung vom Gesichtspunkte der Grossindustrie). W. Eilender. A study of the economic features attending the operation of electric furnaces. Discus-Stahl u Eisen-Ills. 4200 w. April 10, 1913. No. 42107 D.

The Determination of Oxygen in Iron and Steel by Reduction in an Electric Vacuum Furnace. William H. Walker and Walter A. Patrick. Read before the Int. Cong. of Ap. Chem. Outlines methods that have been tried and proposed and describes the method named. Chem Engr — June 1, 1913. No. 43162 C.

Electric Steel Production and Its Expansion. W. Eilender, in Stahl und Eisen. A German discussion from the large industry point of view. A comparison of acid and basic steels from the Heroult furnace. 3000 w. Ir Age—June 5, 1913. No. 42660 C.

The Electric Production of Steel. Illustrated review covering the time from the early experiments of Siemens to the 30-ton furnace of to-day. 2500 w. Sci

Am—Aug. 2, 1913. No. 44073. Electric Steel Furnaces in Sheffield. Information concerning electric furnaces in operation, with special reference to Messrs. Darwin and Milner's tool steel furnace. Ills. 3000 w. Elec Rev, Lond —July 25, 1913. No. 44163 A.

New Developments in the Electric Production of Pig Iron in Scandinavia (Neueres aus der Elektro-Roheisenerzeugung Skandinaviens). A. Beielstein. A statement of the latest improvements and a summary of the output of the region. 5600 w. Stahl u Eisen-July 31, 1913. No. 44611 D.

See Electric Furnaces, and Electrometallurgy, under ELECTRICAL ENGINEERING, Electro-Chemistry; Furnaces, under ME-CHANICAL ENGINEERING, Machine Works and Foundries; Refining, and Smelting. under Iron and Steel.

Flue Dust

The Reclamation of Flue Dust for Furnace Use. Albert F. Plock. A discussion of the nodulizing, briquetting, and sintering processes. 1500 w. Ir Trd Rev—May 1, 1913. No. 41795.

Furnace Firing

Firing for Direct Steel Manufacture (Feuerung für direkte Stahlerzeugung). Carl Otto. A review of methods practised in the past in comparison with present precise methods. 3500 w. Feuerungs-April 15, 1813. No. 42128 D.

Furnaces

Some Fundamental Faults of Present-Day Furnaces and Their Remedies. Al-Considers briefly leyne Reynolds. principles of combustion, and explains devices of the author's for securing complete combustion. Ills. 10000 w. Ir & St Inst-May, 1913. No. 42245 N.

The Process of Combustion in Reverbatory Furnaces (Ueber die Verbrennungsvorgänge in Giessereiflammöfen). Bernhard Osann. Results of combustion tests extending over eighteen hours. 1400 w. Stahl u Eisen — April 24, 1913. No. 42111 D.

Gas Cleaning

Apparatus for Catching Cinders in Gases. Illustrated description of a method found efficient by the New York Edison Co. 2500 w. Ir Age—Sept. 11, 1918. No. 45050 C.

Geology

Use of Geology in Iron Ore Explora-C. K. Leith. Discusses plans of exploration desirable from a geologic standpoint, referring to Lake Superior, Canada, Cuba and Brazil. 5500 w. Ec-Geol-Oct.-Nov., 1912. No. 38503 D.

Greece

Chromiferous Iron Ores of Greece and Their Utilization. Herbert K. Scott. Information concerning the Greek deposits with suggestions for their utilization.
Maps & Ills. 4000 w. Ir & St Inst— May, 1913. No. 42248 N.

Hardening
The Hardness of Metals. Thomas A. Eastick. Describes hardness and methods of hardening, with related subjects. Ills. 2500 w. Sci Am Sup—May 3, 1913. No. 41783.

The Cold-Working of Metals (Sur l'écrouissage des métaux). M. Hanriot. A comparative study of results of alloys of differing constituencies. Ills. w. Tech Mod — May 1, 1913. 42177 D. No.

On Cold Working (Sur l'écrouissage). M. Hanriot. Theories advanced and definitive qualities suggested on annealing, tempering and cold-working. Ills. 5500 w. Rev de Metal — May, 1913. No.

42189 H.

Cold Working (De l'écrouissage). M. Galy-Aché. Presenting opinions on P. Galy-Aché. the structural changes effected in the material so hardened as differing from opinions by MM. Le Chatelier and Guillet. 4500 w. Rev de Metal-May, 1913. No. 42188 H.

The Influence of Cold-Working on the Properties of Steel (Influence de l'écrouissage sur les propriétés de l'acier). M. P. Goehrens. À series of tests to determine the elasticity, resistance, hardness,

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specific weight, electric properties, etc., on metal so worked. Ills. 56 pp. Rev de Metal—May, 1913. No. 42190 H.

Researches on the Annealing of Cold-Worked Products (Recherches sur le recuit des produits écrouis). Léon Guillet. Results of an extensive series of tests. Diagrams. 2500 w. Rev de Metal—May, 1913. No. 42191 H.

Hardening and Tempering Steel. A review of the general requirements and characteristics of quenching and tempering baths. Ills. 3000 w. Mach, N Y—Oct., 1913. No. 45605 C.

See also Annealing, under MECHANICAL ENGINEERING, Machine Works and Foundries.

Heat Treatment

Microscopic Revelations of Steel Structures. E. F. Lake. Illustrated study of structural changes due to heat-treatment. 4000 w. Mach, N Y-May, 1913. No. 41789 C.

The Tenacity, Deformation, and Fracture of Soft Steel at High Temperatures. Walter Rosenhain and J. C. W. Humfrey. Gives results of an investigation of the mechanical behavior of iron and high temperatures. Ills. 13000 w. Ir & St Inst.—May, 1913. No. 42247 N.

Influence of Mass in Heat-Treatment of Steel. K. W. Zimmerschield. Read before the Am. Soc. for Test. Mat. Gives results of experiments with explanations. 1000 w. Ir Trd Rev—July 10, 1913. No. 43602.

The Reducibility of Metallic Oxides as Affected by Heat Treatment. Woolsey McA. Johnson. A study of the requisite preparation of oxides for reduction as indicated by the Johnson "reaction tester." Ills. 2800 w. Bull Am Inst Min Engrs—July, 1913. No. 44006 F.

Heat-Treated Automobile Frame Steel.

Heat-Treated Automobile Frame Steel.

D. K. Bullens. A comparison of alloy and carbon steels. Ills. 3000 w. Ir Age
—July 24, 1913. No. 43847 C.

See also Case Hardening, and Castings, under Mechanical Engineering, Machine Works and Foundries.

India

The Origin of the Iron Industry in India and the Development of the Tata Iron and Steel Co. (Die Grundlagen der Indischen Eisenindustrie und die Entwicklung der Tata Iron and Steel Co.). Axel Sahlin. A brief historical summary of conditions. Ills. 5000 w. Stahl u Eisen—Feb. 13, 1913. No. 40500 D.

Ingots

Influence of Pouring on Quality of Steel. Abstract translation of an article by Dr. C. Canaris. A study of ingot defects, their origin, and their effect upon steel rolled into plates. 2500 w. Ir

Age—Dec. 5, 1912. No. 38040 C.

The Influence of Pouring on the Quality of Mild Steel Blooms (Ueber den Einfluss des Giessens auf die Qualität von Flusseisenbrammen). C. Canaris. Discusses the main effects of bad castings; contraction, piping, segregation, blow holes, surface blisters and scale. Ills. Serial. 1st part. 1400 w. Oest Zeit f Berg u Hüttenwesens—Nov. 16, 1912. No. 38414 D.

Welding Blow-Holes and Blisters in Steel Ingots (Das Zusammenschweissen von Blasen und Hohlräumen in Stahlblöcken). G. Goldberg. Describes process, gives formula for satisfactory compound and discusses results. 2800 w. Giess-Zeit—Nov. 15, 1912. No. 38424 D.

pound and discusses results. 2800 w. Giess-Zeit—Nov. 15, 1912. No. 38424 D. Slag Enclosures (Les "inclusions de scories"). Walter Rosenhain. Report presented before the Sixth Congress of the International Association for Testing Materials. Ills. 7000 w. Rev de Metall—Dec., 1912. No. 38485 H.

Slag-Enclosure. Dr. Walter Rosenhain. Deals with the subject under the headings of nomenclature; study of the constitution of the enclosures; the mode of formation and origin and suggested methods of prevention; distribution in steel and their effects on the properties; and suggested directions for further investigation. Ills. 7000 w. Am Found Assn—Dec., 1912. No. 39519 N.

Method of Producing Sound Ingots. W. C. Cushing. Explains the cause of piping in ingots; and reprints two papers by Sir Robert Hadfield, read before the Iron and Steel Inst on "Methods of Producing Sound Ingots," and Segregation in Steel Ingots. Discussion. Ills. 14000 w. Bul Am Ry Engng Assn—Nov., 1912. No. 39560 N.

The Non-Metallic Impurities Found in Steel. Considers the character and sources of slag inclusions. 2000 w. Ir Age—Jan. 23, 1913. No. 39322 C.

Influence of Silicon on Open-Hearth Ingots and Rails. M. H. Wickhorst. Reports an investigation between the limits of .15 per cent. and .54 per cent. silicon, stating results. Ills. 10000 w. Bul Am Ry Engng Assn—Nov., 1912. No. 39561 N.

Method of Producing Sound Ingots.
Information concerning the new process of Sir Robert Hadfield, and results obtained with it in France. Ills. 2200 w. Met & Chem Engng—Feb., 1913. No. 39683 C.

An Analysis of Steel Ingot Manufacture. Bradley Stoughton. Considers the influence of common defects on the quality of rails and structural material, and

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means for correcting them. Ills. 5000 w. Ry Age Gaz — Feb. 7, 1913. No. 39714.

The Use of Anti-Piping Thermit in Casting Steel Ingots. E. A. Beck. Describes the new method worked out by the Th. Goldschmidt A. G., Germany. Ills. 2500 w. Bul Am Inst of Min Engrs April, 1913. No. 41664 F.

The Production of Sound Steel Ingots. Leslie E. Howard. Illustrates and describes methods and apparatus of the Simonds Mfg. Co. in producing crucible steel ingots free from pipe and segregation, by compression when fresh from molds. 4500 w. Ir Age—April 24, 1913. No. 41584 C.

Piping and Segregation of Ingots of Steel and Ductility Tests for Open-Hearth Steel Rails. P. H. Dudley. Mainly considers rail steel. Ills. 10500 w. Bul Am Inst of Min Engrs—April, 1913. No. 41667 F.

Commercial Production of Sound Steel Ingots. Emil Gathmann. Describes and illustrates methods of producing sound steel in an economical manner, by rational changes in the methods, casting, cooling and handling of the ingots. 2500 w. Bul Am Inst of Min Engrs—April, 1913. No. 41665 F.

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The Talbot Process of Improving Ingots. The paper by Benjamin Talbot, describing the process, with general discussion at the N. Y. meeting. 3500 w. Ir Age—Nov. 14, 1912. No. 37753 C.

Prerolled Pipeless Ingots. Benjamin Talbot. Address in N. Y. City describing the Talbot process for making solid ingots. Discussion. 3000 w. Eng News—Nov. 21, 1912. No. 37728.

The Production of Solid Steel Ingots. Benjamin Talbot. Describes ingots produced by the Talbot process. Discussion. Ills. 8000 w Pro Am Inst of Min Engrs—April, 1913. No. 41663 F.

On the Production of Sound Steel by Lateral Compression of the Ingot Whilst Its Center Is Liquid. Benjamin Talbot. Outlines the method and gives results and conclusions based on the investigation of more than one hundred large ingots. Ills. 5800 w. Ir & St Inst—May, 1913. No. 42249 N.

Plant for Hadfield Method of Producing Sound Steel Ingots. Sir Robert A. Hadfield. Briefly outlines the method and describes plans of working. Ills. 1200 w. Bul Am Inst of Min Engrs—April, 1913. No. 41666 F.

Sound Steel Ingots. Discussion of the papers of Benjamin Talbot, E. A. Beck, Emil Gathmann, Sir Robert A. Hadfield, and P. H. Dudley, presented at the New

York meeting, Feb., 1913. Ills. 15000 w. Bul Am Inst of Min Engrs—April, 1913. No. 41668 F.

Influence of Silicon on Open-Hearth Ingots. Report of a series of tests to ascertain the effects of varying amounts of silicon on ingots and rails. Ills. 1800 w. Ir Trd Rev — April 3, 1913. No. 41063.

Shrinkage and Piping of Iron (Schwinden und Lunkern des Eisens). A review of the studies of West, Osann, and others, on the causes and modes of prevention of defects in ingots. Ills. 3100 w. Stahl u Eisen—April 24, 1913. No. 42112 D.

Ingot Iron. An account of the new mill at Middletown, Ohio, and the increased output of this metal, its quality, use, etc. Ills. 2500 w. Ry Age Gaz—July 18, 1913. No. 43802.

Commercial Production of Sound Steel Ingots. Emil Gathmann. Read before the Iron & Steel Inst. Outlines general practice and describes the stripping, ingot-mould and stool, explaining the advantages of the system. Ills. 2500 w. Ir & Coal Trds Rev—Sept. 5, 1913. No. 45187 A.

The Coefficient of Flow and Its Importance in Tapping in Metallic Ingots (Le coefficient d'écoulement et son importance dans la coulée en lingotières métalliques). M. Portevin. A coefficient with variables based on vent, metal used, and temperature. 1700 w. Rev de Metall—Aug., 1913. No. 45321 H.

Iron Deposits

The Iron Ore Deposits of the Southern States. Edwin C. Eckel. Information concerning the extent of these ore bodies and their formation, with a discussion of their adaptability to the manufacture of steel. Ills. 5000 w. Ir Trd Rev—Jan. 2, 1913. (Special.) No. 38744 D.

Lake Superior and Cuban Iron Ores. Day Allen Willey. Information concerning the companies controlling the deposits, with description of the mining and handling methods in Cuba. Ills. 2500 w. Mines & Min—Jan., 1913. No. 38716 C.

Iron Industry
The Iron Industry in the Year 1911
(Das Eisenhüttenwesen im Jahre 1911).
B. Neumann. Statistics of production by country and month. Serial. 1st part. 5400 w. Glückauf—Dec. 21, 1912. No.

39008 D.

The Line of Furnace Development of the Southern Iron Industry. John Jermain Porter. A review of progress and account of present conditions. 2500 w. Mfrs' Rec.—March 27, 1913. (Special.) No. 41551 N.

Iron Mining

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Methods

The Iron and Steel Possibilities of the South. Edwin C. Eckel. Reviews the growth of the industry, 1810-1912, considers the ore supply, coal reserves, and future possibilties. 5000 w. Mfrs' Rec — March 27, 1913. (Special.) No. 41552 N.

Iron Mining

Marquette Range Shows Continued Progress. Illustrates and describes recent improvements introduced in the properties, especially the increasing application of electric power. 2500 w. Min & Engng Wld—Dec. 7, 1912. No. 88090.

Iron Sands

The Magnetic Iron Sands of Natashkwan, County of Saguenay, Province of Quebec. George C. Mackenzie. Report of an investigation of these magnetic iron sands, with illustrations and maps. 50 pp. Can Dept of Mines—No. 145. No. pp. Can 42999 N.

Ironworks

Charcoal Ironworks. Henry B. Wheatley. Reviews the history of early iron-works in England. 6500 w. Jour Soc of Arts-Sept. 19, 1913. Serial, 1st part. No. 45555 A.

Low-Grade Ores

Low-Grade Iron Ores and Their Beneficiation. Dwight E. Woodbridge. Considers various methods of concentration in use and the increase in available reserves. Ills. 3000 w. Min & Engng Wld —April 12, 1913. No. 41199.

Magnetite

Magnetite in Mattes and Slags. E. W. Walter. Gives opinions of various authorities as to its formation. 1200 w. Eng & Min Jour-Jan. 25, 1913. No. 39376.

Manganese Steel

Heating and Cooling Curves of Man-ganese Steel. Sir Robert A. Hadfield. Read before the Iron & Steel Inst. An account of a special steel which apparently does not show any critical changes. 1400 w. Ir & Coal Trds Rev-Sept. 5, 1913. No. 45183 A.

Metallography

The Microstructure of Iron and Steel. William Campbell. An account of the main features encountered in the microscopic examination of iron and steel. Ills. 7000 w. Bul Am Inst of Min Engrs-Dec., 1912. No. 38367 F.

Report on the Progress in Metallog-raphy from the Beginning of the Year 1909 to the End of the Year 1911 (Rapport sur les progrès de la Métallographie depuis le commencement de l'année 1909 jusquá la fin de 1911). E. Heyn. view of the studies of various metallographists during these years, with references to their published statements. Ills. 2100 w. Rev de Metall—Dec., 1912. No. 38483 H.

Microscopic Examination of Some Highly-Alloyed Special Steels (Mikroskopische Untersuchung einiger hochleg-Felix Fettweis. Sonderstähle). A series of metallographic studies. Plates. Stahl u Eisen-Nov. 7, 1912. 2500 w. No. 38403 D.

Metallography and Its Application to Railways (Ueber Metallographie und deren Anwendung im Eisenbahnwesen). Herr Füchsel. A study of the metallurgy of steel rails. Ills. Serial. 1st part. 2800 w. Glaser's Ann-Nov. 15, 1912.

No. 38432 D.

Crystalline Growth of Strained Ferrite. Albert Sauveur. Read before the Int. Cong. for Test. Mat. An investigation of

conditions resulting in brittleness in working metals. Ills. 1500 w. Ir Age—Jan. 23, 1913. No. 39325 C.

The Microstructure of Sintered Iron-Bearing Materials. B. G. Klugh. Report of an investigation of the ultimate structure of iron-bearing materials which have been subjected to heat treatment, to determine the relation of the microstructure to its specific susceptibility to the action in the blast-furnace. Ills. 3500 w. Bul Am Inst of Min Engrs May, 1913. No. 42458 F.

The Microstructure of Titaniferous Magnetites. Joseph T. Singewald, Jr. A brief statement of the results of a metal-lographic study of the titaniferous mag-netites of the United States. Ills. 2000 Ec-Geol - April-May, 1913. No.

42322 D.

See also Micrography, under Iron and Steel.

Metallurgy

Electric Heating and the Removal of Phosphorus from Iron. Albert E. Greene. Explains the Metallurgical reactions by which phosphorus can be removed from iron, showing the necessity of controlling the conditions, particularly the temperature, by means other than combustion in the furnace-chamber. 3500 w. Am Inst of Min Engrs-Feb., 1913. No. 40161 F.

Recent Advances in Scientific Steel Metallurgy. J. O. Arnold. Lecture be-fore the Roy. Inst. Briefly reviews the past history of steel and discusses modern scientific advances in steel metallurgy. 2500 w. Nature — March 13, 1913. Serial. 1st part. No. 40801 A.

Methods

Mining Methods on the Missabe Iron ange. Willard Bayliss, E. D. M'Neil Range. and J. S. Lutes. Considers the under-

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ground mining, open pit, and milling-pit mining. Ills. 6000 w. L Superior Min Inst—Aug. 26, 1913. No. 44590 N.

Michigan

Scientific Management on the Menominee Range. George E. Edwards. An account of the development of four properties by the Munro Iron Mining Co. Ills. 2500 w. Min & Engng Wld—Nov. 28, 1912. No. 37780.

History of the Cascade Iron Range of Michigan. P. B. McDonald. Reviews the history of the mines and discusses the geology and the future of the district. 4000 w. Min & Engng Wld-Nov. 16,

1912. No. 37609.

Extensive Operations on the Gogebic Iron Range. George E. Edwards. Illustrates and describes recent developments

of interest. 2500 w. Min & Engng Wld —Feb. 8, 1913. No. 39740. Beneficiation of Lake Iron Ores. Iron Ores. Dwight E. Woodbridge. Report concerning projects developed during the past year. Briefly considers concentration, calcining, the Grondal process, desulphurizing, etc. 1100 w. Eng & Min Jour—Feb. 8, 1913. No. 39736.

Progressive Mines in the Iron River District. George E. Edwards. Illustrated account of recent improvements introduced. 1500 w. Min & Engng Wld—March 22, 1913. No. 40770.

Active Iron Mines in Michigan Ranges. George E. Edwards. Brief account of the mines that will be active this season. Ills. 2500 w. Min & Engng Wld—June 7, 1913. No. 42722.

Developments Michigan on Ranges. P. B. McDonald. Reviews the history of iron ore shipments from Michigan ranges, describing the principal features of important districts. Ills. 3500 w. Eng & Min Jour-Aug. 23, 1913. No. 44551.

See also Ore Deposits and Prospecting, under Iron and Steel.

Micrography

Micrographical Studies. Memoir on certain micrographical observations of practical interest for valuing and testing and for working metals by different methods. Ills. Dec., 1912. ls. Ills. 1500 w. Am. Found Assn—ec., 1912. No. 39520 N.
Industrial Application of Microscopic

Metallography for Controlling the Work Put on Copper and Brasses. C. Grard. Read before the Int. Assn. for Test. Mat. Describes an investigation and states re-3500 w. Chem Engr-Dec., 1912.

No. 38818 C.

Standard Magnification for Micrographs. M. T. Lothrop and C. R. Bulley. Read before the Int. Assn. for Test. Mat.

A study showing the unsatisfactory state at present and urging standardization. 1100 w. Chem Engr—Jan., 1912. No. 39499 C.

An Improved Metallurgical Microscope. Wirt Tassin. Illustrates and describes a complete metallographic outfit consisting of a camera, microscope, and illuminating device, all self-contained. 1000 w. Met & Chem Engng-Jan., 1913. No. 38973 C.

Oblique Illumination in Petrographic Microscope Work. Fred Eugene Wright. Considers methods of producing oblique illumination and their suitability for use in practical work. 5000 w. Am Jour of Sci—Jan., 1913. No. 39437 D.

Microscopy

The Microscope in the Iron and Steel Industry. Albert Sauveur. Extracts from a paper read before the Am. Ir. & St. Inst. Explains the practical value of the instrument. Ills. Discussion. 4500 Ir Trd Rev - June 5, 1913. No. 42674.

A Method of Repairing Sections of Fractures of Steel for Microscopic Examination. Alfred Campion and John M. Ferguson. Read before the Iron & Steel Inst. Describes a method devised by the authors, giving a few micrographs to show results. 1000 w. Ir & Coal Trds Rev-Sept 5, 1913. No. 45191 A.

See also Micrography, under MECHANI-CAL ENGINEERING, Materials of Construction.

Mill Design

Design of Structural Steel Plant. H. Darling. Considers general conditions controlling the design of a plant of 10,-000 tons a year capacity. 4000 w. Can Engr—June 5, 1913. Serial. 1st part. No. 42686.

Mining Industry

Some Suggestive Phases of the Iron Mining Industry of Eastern North America. Frank L. Nason. A review of phases and history since 1608, discussing facts that indicate the return of iron-making to the East. 5000 w. Jour Can Min Inst—Vol. XIV. No. 42027 N.

Minnesota

The Iron Ores of the South Range of the Cuyuna District, Minnesota. Carl Zapffe and W. A. Barrows, Jr. Gives the location of the district and considers the ores. The information is from drill-hole records. 4000 w. Bul Am Inst of Min Engrs-Feb., 1913. No. 40156 F.

Rapid Development of the Cuyuna George E. Edwards. An account of the mines and production of present interest. 3000 w. Min & Engng

Wld-Aug. 23, 1913. No. 44579.

Missouri

IRON AND STEEL

Open-Hearth Furnaces

Missouri

Iron Mining in Missouri. Lucius L. Wittich. An account of the revival of work on deposits formerly extensively mined. Ills. 2000 w. Mines & Min— Nov., 1912. No. 37194 C.

Montreal Mine

Montreal Iron Mine, Gogebic Range. Illustrate description of the surface equipment, and the hoist safety devices, underground pump stations and mining methods of the Montreal mine. 2500 w. Eng & Min Jour-May 10, 1913. No. 41961.

Nevada

The Barth Iron Ore Deposits. Claude Jones. Detailed description of these deposits in Nevada and the development. 5000 w. Ec-Geol—April-May, 1913. No. 42324 D.

Newfoundland

The Wabana Iron Mines of the Nova Scotia Steel and Coal Company, Limited. Thomas Cantley. Illustrated description of the ore beds, iron mines, methods, submarine development, etc. Plates. 7500 w. Jour Can Min Inst—Vol. XIV. No. 42028 N. New York

The Ontario Iron Mine, New York. Charles F. Taylor and William M. Booth. Illustrated description of the methods of working hematite ore deposits in Wayne Co., New York. 1200 w. Eng & Min Jour-Nov. 9, 1912. No. 37365.

Nomenclature

Nomenclature of the Microscopic Constituents and Microstructures of Steel and Cast Iron (Nomenclature des constituants microscopiques et des micro-structures de l'acier et de la fonte). Report of an international commission presented by H. M. Howe and Albert 7000 w. Sauveur. Diagram. Metall-Dec., 1912. No. 38484 H.

The Nomenclature of the Microscopic Substances and Structures of Steel and Cast Iron. A committee report to the Int. Assn. for Test. Mat. 9000 w.

Engr-Jan., 1913. No. 39498 C.

On Uniform Nomenclature of Iron and Steel. H. M. Howe. Report of the Committee, presented by the Chairman. 8500 Am Found Assn-Dec., 1912. No.

39527 N.

Utility of a Metallographic Nomenclature. Felix Robin. Suggestions for substituting rational symbols, grouping as far as possible analogous constitutions. 1000 Am Found Assn—Dec., 1912. No. 39513 N.

Old Mines

A Methuselah Among American Mines. L. O. Kellogg. Illustrated account of the Sterling iron mine in eastern New York. which has been operated continuously for 160 years. 1200 w. Eng & Min Jour-Sept. 6, 1913. No. 44988.

Ontario

Development of the Michipicoten Range. Ontario. George E. Edwards. The future of the district is dependent on the hematite ore, although other ores are found. Illustrated description of development work. 2000 w. Min & Engng Wld-Feb. 15, 1913. No. 39868.

Open-Hearth Furnaces

Open-Hearth Furnace Design and Manipulation. John Ploehm. Describes how the various areas and discussions of a 25ton furnace were proportioned and give the results obtained. Ills. 4500 w. Foundry—Nov., 1912. No. 37231.

The Siemens Regenerative Gas-Fired "Push" Furnace for Reheating Ingots, Blooms and Billets. Frederick Siemens. Illustrated detailed description. 2200 w. Ir & Coal Trds Rev-Nov. 8, 1912. No.

37653' A.

Open-Hearth Furnace Heads (Ueber Martinofenköpfe), Hubert Hermanns. Discusses different practice in the design of heads, American and German, and describes methods of setting. Ills. Serial. 1st part. 1600 w. Giess-Zeit-Oct. 15, 1912. No. 37416 D.

Silica Bricks in Open-Hearth Furnaces Ueber Silikasteine für Martinöfen). Otto Lange. Gives qualities of good brick, methods of treatment and application, forms, etc. Ills. 4200 w. Stahl u Eisen —Oct. 17, 1912. No. 87404 D.

The Heat Accumulation of the Open-Hearth Furnace in the Course of its Life (Die Wärmespeicher des Siemens-Martin-Ofens im Verlaufe der Ofenreise. Eduard Discussion on the efficiency and Juon. durability of heat accumulators. 1st part. 3500 w. Stahl u Serial. Eisen-Oct. 24, 1912. No. 37406 D.

Experiments with Open Hearth Regen-E. Juon. Abstract translation from Stahl und Eisen. Gives valuable information secured by the use of pressure and temperature meters. 3500 w.

Ir Age—Dec. 26, 1912. No. 38540 C. Multiple-Hearth Siemens-Martin Fur-Furnace Doors and Circular (Mehrherdige Siemens-Martin-Oefen und runde Siemens-Martin-Ofentüren). Dietrich. Describes advantages from double-hearth operation, and gives de-Ills. tails of circular door. 1500 w. Stahl u Eisen-Nov. 14, 1912. No. 38405 D.

Use of Cold Coke-Oven Gas in Steel Production. A report of advantages de-

Open-Hearth Furnaces

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veloped in recent open-hearth practice in 2000 w. Ir Age-April 24, Germany. 1913. No. 41586 C.

The Nature and Sequence of Reactions in the Acid Open-Hearth Process. F. A. Matthewman and A. Campion. A general review of the subject, based upon re-sults and figures obtained during a number of years of practical working of open-hearth furnaces. Discussion. 1300 w. Jour W of Scotland Ir & St Inst-Dec., 1912, Jan.-Feb., 1913. No. 41702 N.

Open-Hearth Furnaces, Maerz Construction (Ueber Siemens-Martin-Oefen, Bauart Maerz). Rud. Becker. Details of improvements effected by the Maerz design. Ills. 3500 w. Stahl u Eisen—

March 20, 1913. No. 41405 D. Operation of the Friedrich Open-Hearth Furnace (Betriebserfahrungen mit dem Siemens-Martin-Ofen, Bauart Friedrich). O. Friedrich. Details of the Friedrich construction, as shown at Julienhütte. Ills. 2100 w. Stahl u Eisen-March 13, 1913. No. 41403 D.

The Heat Balance of the Open Hearth. Sidney Cornell. An account of an elaborate heat-efficiency test made on two 60ton open-hearth furnaces. 7000 w. Met Chem Engng — May, 1913.

41902 C.

Manufacture of Open-Hearth Kenneth Seaver. Illustrated de-The scription of the modern open-hearth furnace and its operation. 2500 w. Ir Trd Rev—May 15, 1913. Serial. 1st part. No. 42065.

On Modern Open-Hearth Steel Fur-Benjamin Talbot. Deals especially with the development of the tilting form of open hearth furnace. Ills. 3000 w. Iron & Steel Inst, No. 16—Sept., 1913.

No. 45095 N.

Tilting Furnaces Installed by Lacka-wanna Steel. Describes the two tilting open-hearth furnaces for refining steel by the duplex process. Ills. 1500 w. Ir Trd Rev—Sept. 11, 1913. No. 45049.

Improvements in the Bernhardt Open-Hearth Furnace. F. Bernhardt, in Stahl und Eisen. Illustrates and describes improvements introduced in the most recent

form of this furnace. 1500 w. Ir & Coal Trds Rev—Aug. 22, 1913. No. 44933 A. Some Observations on Miniature or Detachable Open-Hearth Furnaces. W. M. Carr. Explains the salient features resulting from a new application of steel-melting furnaces. Ills. 5500 w.

Am Found Assn—Oct, 1913. No. 46256 N.
Use of Waste Heat on Open Hearth
Furnaces. Shows that losses are reduced about 40 per cent. by conducting the gases to a boiler plant, and illustrates and describes details of construction.

2000 w. Ir Age—Feb. 20, 1913. No. 39925 C.

Utilization of Waste Heat from Siemens-Martin Furnaces (Ueber die Abhitzeverwertung bei Siemens-Martin-Oefen). J. Schreiber. Plans and descriptions of plants utilizing waste heat, and results attained thereby. Ills. Serial, 1st part. 5600 w. Stahl u Eisen—Jan. 9, 1913. No. 40003 D.

The Blair Indestructible Port and Bulkhead Open-Hearth Furnaces. Illustrated description of the arrangement as applied to some open-hearth furnaces in the Glasgow district, explaining the advantages resulting. 2500 w. Ir & Coal Trds Rev — Feb. 21, 1913. No. 40322 A.

New Design of Open Hearth Steel-Furnace Using Producer Gas. Herbert F. Miller, Jr. Describes a design, explaining its advantages. Ills. 1000 w. Bul Am Inst of Min Engrs—March, 1913. No. 40895 F.

Development in Open-Hearth Furnaces, Bernhardt Construction (Fortschritte des Bauart Siemens-Martin-Ofens, hardt). Fr. Bernhardt. Plans and description of a 50-ton furnace for molten charges devised by the author. 2000 w. Stahl u Eisen—Feb. 20, 1913. No. 40507 D.

New Design of Regenerators of Open-Hearth Furnaces. H. F. Miller, Jr. Calls attention to defects of the present type of regenerator chambers, the qualities to overcome these defects, and gives results of a new design. Ills. 1000 w. Bul Am Inst of Min Engrs-June, 1913. No. 43258 F.

Ore Deposits

The Iron Ore Deposits of the Cebolla District, Gunnison County, Colorado. Joseph T. Singewald, Jr. Describes the general geology and discusses the ore deposits. Ills. 3500 w. Ec-Geol-Sept., 1912. No. 37672 D.

The World's Greatest Iron Ore Deposits. Day Allen Willey. A contrast of methods and machinery used in Cuba and Lake Superior. Ills. 5500 w. Engineering Magazine—March, 1913. No. 40083 B.

Cuban Iron-Ore Reserves. De Berniere Whitaker. Gives a summary of three billion tons almost wholly free from trust

control. 800 w. Engineering Magazine

Nov, 1913. No. 46309 B.

The Iron Resources of the Chattanooga District. John Jermain Porter. Information showing that sufficient ore exists in this district to supply several

steel plants. 1700 w. Mfrs' Rec—Oct. 9, 1913. No. 45754.

The Titaniferous Iron Ores in the United States, Their Composition and Economic Value. Joseph T. Singewald,

Ore Resources

IRON AND STEEL

Pyrites

A report of investigations aiming to find a method of utilizing these ores. Ills. 141 pp. U S Bureau of Mines— Bul 64. No. 46111 N.

Ore Resources

The Iron Ore Resources of the World. Frank D. Adams. A summary of the results of an investigation. 4000 w. Jour Can Min Inst—Vol. XIV. No. 42025 N. See also Canada, under Iron and Steel.

Ore Sorting

Iron Ore Sorting Plant at the Gellivare Mines, Sweden. Harry J. H. Nathorst. Illustrated description of plants erected for sorting the newly-mined iron ore. 2000 w. Ir & Coal Trds Rev-March 21, 1913. No. 41022 A.

Pig Iron

The Foundry and the Pig Iron Market. A. I. Findley. Discusses the supply and price of pig iron and the probability of certain changes affecting them. 2500 w. Am Found Assn—Dec., 1912. No. 38616 N.

Pig Iron and Its Method of Manufacture. John Jermain Porter. One of a series of articles under title of "The A B C of Iron and Steel." Ills. 6000 w. Ir Trd Rev-Jan. 2, 1913. (Special.) No.

The Estimation of Pig Iron. Explains why the method of estimating from the appearance of a fracture should be discarded and chemical analysis exacted in its place. 1000 w. Am Found

Assn—Dec., 1912. No. 39511 N.

The Methods of the United States
Steel Corporation for the Commercial Sampling and Analysis of Pig-Iron. compilation of standard methods for the sampling and subsequent analysis of mol-

sampling and subsequent analysis of invi-ten pig-iron. 10800 w. Bul Am Inst of Min Engrs—Feb., 1913. No. 40162 F. Specifications for Foundry Pig Irons. W. B. Parker. Abstract of paper before The British Found. Assn. Deals with pig irons used in iron foundries, limited to the requirements of the British Isles. 5000 w. Ir & Coal Trds Rev—March 28, 1913. No. 41148 A.

Piping
The Ferrum System of Wrought Piping. Illustrates and describes forms of pipe joints for high pressure work.

1800 w. Ir Age—Oct 18 1019 Ir Age-Oct. 16, 1913. No. 45912 C.

Production

The Rank of the Iron Industry in Industrial Life (Die Stellung der Eisenindustrie im Wirtschaftsleben). Reviews statistics of persons employed in the iron trade, showing its industrial importance. 3000 w. Stahl u Eisen-Nov. 28, 1912. No. 38409 D.

What Our Neighbors Can Do in Mining Iron Ore. Dwight E. Woodbridge. Calls attention to important work in progress in Alabama, New York, and other states. 1800 w. L Superior Min Inst—Aug. 26, 1913. No. 44589 N.

Course of Iron Output and Prices in Century. E. C. Eckel. Statistical research covering the period, 1800-1910, with conclusions relating to the future of the industry. 2000 w. Ir Trd Rev— Aug. 21, 1913. No. 44526.

Puddling

The Reactions of the Puddling Process. Thomas Turner. Discusses the possibility of improving the puddling process and urges recognition of the place held by wrought or malleable iron. 6500 w. Jour W of Scotland Ir & St Inst-Dec., 1912, Jan.-Feb., 1913. No. 41701 N.

Roe Puddling Process Developments. David E. Roberts. Read before the Staffordshire Inst. (Abstract.) Illustrates and describes the puddling plant of the Reading Iron Co., U. S. A. Discussion. 2500 w. Ir & Coal Trds Rev—April 18,

1913. No. 41780 A.

Pure Iron

The Critical Ranges of Pure Iron, with Special Reference to the A. Inversion. H. C. H. Carpenter. Experimental results and reasoning with statement of

conclusions. 3300 w. Ir & St Inst—May, 1913. No. 42236 N.
The Critical Ranges A2 and A3 of Pure Iron. G. K. Burgess and J. J. Crowe. Gives a critical historical summary of the experimental investigations of the location of A2 and A3 in pure iron, with brief mention of the theoretical aspects, and an account of a series of experiments with samples of very pure iron. Ills. 13500 w. Bul Am Inst of iron. Ills. 13500 w. Bul Am Inst Min Engrs—Oct, 1913. No. 46355 F.

Pyrites in Canada: Its Occurrences. Exploitation, Dressing and Uses. Alfred W. G. Wilson. Information and description of properties with outline of methods employed for utilizing the sulphur contents of these ores. Map & Ills. 200 pp. Can Dept of Mines — No. 167. No. 40817 N

The Occurrence of Pyrites in Canada. Alfred W. G. Wilson. Reviews the occurrence in the different provinces. Map. 3000 w. Can Min Jour—April 1, 1913. Serial. 1st part. No. 41097. Some Notes on Pyrite and Marcasite.

E. B. Wilson. Brief Study with statement of deductions. 1800 w. Jour Can Min Inst—Vol. XIV. No. 42029 N.

The Vadose Synthesis of Pyrite. Alfred R. Whitman. Describes experiments undertaken to determine whether it

Refining

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would be possible to reproduce in a laboratory the essential conditions of vadose circulation, and obtain the oxidation, solution, transportation, reduction, and redeposition of pyrite. 5000 w. Ec-Geol—Aug., 1913. No. 44382 D.

Refining

The Electric Refining of Steel in an Induction Furnace of Special Type. Otto Frick. Read before the Iron & Steel Inst. Discusses the future development of the electric furnace, especially considering the Frick furnace at Krupp's works. Ills. 7500 w. Ir & Coal Trds Rev—Sept. 5, 1913. No. 45195 A.

Reviews of 1912

The Metallurgy of Iron and Steel. Bradley Stoughton. Reviews the developments during 1912, novelties in practice introduced, etc. 4500 w. Eng & Min Jour—Jan. 11, 1913. No. 38987.

Progress in the Metallurgy of Iron and Steel. Bradley Stoughton. A résumé of the developments of 1912 in works, practice, and in the experiments of well-known laboratory investigators. 4000 w. Ir Age—Jan. 2, 1913. No. 38751 C.

I. The Iron and Steel Industries in the United States. A general review of the past year. II. Review of the Lake Superior Iron-Mining Industry. Dwight E. Woodbridge. Reviews the remarkable industrial expansion and the year's developments. 5500 w. Min & Engng Wld—Jan. 25, 1913. No. 39418.

Jan. 25, 1913. No. 39418.

Iron Ore, Pig Iron, and Steel During the Year. G. H. Cushing. A review of trade conditions, prices, and the influences affecting the Eastern ore trade. 1800 w. Min & Sci Pr.—Jan. 4, 1913. (Special.) No. 38932 C.

European Ore Disappears from Eastern Market. C. J. Stark. Reviews conditions during 1912, showing the elimination of foreign ore and the development of domestic and Cuban properties. Ills. 4500 w. Ir Trd Rev—Jan. 9, 1913. No. 38919.

Iron and Steel in 1912. The production, markets and districts are reviewed by different writers. 7000 w. Eng & Min Jour—Jan. 11, 1913. No. 38985.

The Iron and Steel Trades in 1912. General and district reviews. 14000 w. Ir & Coal Trds Rev—Jan. 3, 1913. No. 39173 A.

The Iron Trade in 1912. Reports for Pittsburgh, Philadelphia, Chicago, and Cincinnati. 9800 w. Ir Age—Jan. 2, 1913. No. 38760 C.

Lake Superior Iron Ore Trade in 1912. Dwight E. Woodbridge. Shows the increasing dependence on the leaner ores, developments in new mines and additional reserves to old properties, etc. 3000 w. Ir Age—Jan. 2, 1913. No. 38762 C.

Rolling Mills

The Jones and Laughlin Continuous Rolls, Pittsburg, Pa. (Kontinuierliche Stabstrasse bein Jones and Laughlin, Pittsburg, Pa.). Fr. Trappiel. Description of roll arrangement, etc. Ills. 1500 w. Stahl u Eisen—Oct. 10, 1912. No. 37403 D.

Studies on North American Rolling Mills (Studien über nordamerikanische Walzwerke). J. Puppe. Reviews some of the interesting features encountered in ten of the leading steel works of the U. S. Ills. Serial. 1st part. 5600 w. Stahl u Eisen—Nov. 21, 1912. No. 38407 D.

Electrically Driven Plate-Armor Rolling Mill in Witkowitz (Elektrisch betriebenes Panzerplatenwalzwerk in Witkowitz). J. Sutmann. Illustrated description of plant. 3100 w. Stahl u. Eisen—Nov. 14, 1912. No. 38404 D. Power Requirements of Rolling Mills.

Power Requirements of Rolling Mills. Wilfred Sykes. Considers the factors controlling the size and equipment required. 4000 w. Pro Am Inst of Elec Engrs—Nov., 1912. No. 37897 F.

Discussion on "Power Requirements of Rolling Mills," Wilfred Sykes, and "The Economical Speed Control of Alternating-Current Motors Driving Rolling Mills," F. W. Meyer and Wilfred Sykes, New York, Nov. 8, 1912. 7000 w. Pro Am Inst of

Elec Engrs—Jan., 1913. No. 39362 F.
Discussion on "Power Requirements of
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"The Economical Speed Control of Alternating-Current Motors Driving Rolling
Mills." F. W. Meyer and Wilfred Sykes.
New York, Nov. 8, 1912. Continued discussion. 3500 w. Pro Am Inst of Elec
Engrs—March, 1913. No. 40446 F.

Electrical Plant for Driving the Reversing Rolling-Mill at the Skinningrove Ironworks. Illustrated detailed description. 5500 w. Elect'n, Lond—Dec. 13, 1912. (Special.) No. 38855 D.

Some Considerations in Connection with Electrically Driven Non-reversing Mills. S. H. Eckmann. A comparison of steam driven mills with electrically driven mills, outlining methods. 4500 w. Elect'n, Lond—Dec. 13, 1912. (Special.) No. 38846 D.

Reversing Mill Trains (Ueber Umkehrstrassenantriebe). Georg Meyer. Practical considerations in the operation of steam, electric, hydraulic or gas driven reversing rolls. Ills. 4200 w. Stahl u Eisen—Jan. 2, 1913. No. 40001 D.

On a New Form of Electrically Driven Two-High Continuous-Running Revers-

Steel Plants

ing Mill. Andrew Lamberton. A short

description of the method. Ills. 2200 w. Ir & St Inst—May, 1913. No. 42242 N. Rolling Mill Practice in the United States. J. Puppe. Read at May meeting of Ir. & St. Inst. A discussion of the types of finishing mills. 3500 w. Ir Trd Rev—May 1, 1913. Serial. 1st part. No. 41796.

Rolling Mill Practice in the United States. Part II. J. Puppe. A review of American practice and the characteristics of construction and arrangement. Ills. 8500 w. Ir & St Inst-May, 1913. No. 42244 N.

Electrically-Operated, Canadian Rolling Mill. Illustrated description of a new plant recently placed in operation at Hamilton, Ont., combining all the latest improvements. 3000 w. Ir Trd Rev— July 3, 1913. No. 43453.

The Key to Industrial Development. James Steelman. Reviews the progress of the rolling mill. Ills. 3500 w. Cassier's—July, 1913. No. 43355.

The Rolling Mill Industry. F. H. Kindl. A condensed general description of rolling mills and their products. 2500 w. Ir Trd Rev—Aug. 7, 1913. Serial, 1st part. No. 44225.

Electric Drive for Reversing Rolling Mills. James A. Seager. Diagram and description of an English installation for operating a 30-inch cogging mill and a 24-inch bar mill. 1500 w. Ir Trd Rev—

New Electrically-Driven Rolling-Mill Plant of the Steel Company of Canada, Limited. Plan and illustrated description of the special features of the plant. 2500 w. Ir & Coal Trds Rev-July 25, 1913. No. 44192 A

Rolling-Mill Engines (Ueber Walzen-zugmaschinen). C. Kiesselbach. A

brief statement of the power require-ments for various duties. 1900 w. Stahl u Eisen—July 17, 1913. No. 44606 D. The Electric Drive for Rolling Mills. Brent Wiley. From a paper read before the Assn. of Iron and Steel Elec. Engrs. Gives a comparison with works using steam engines, with list of gas power plants. 3000 w. Ir Age—Oct. 16, 1913. No. 45914 C.

See also Belts, under MECHANICAL En-GINEERING, Power and Transmission.

Sampling

Sampling Iron Ore at Lake Superior Mines. Benedict Crowell. Read before the L. Superior Min. Inst.. A discussion of the inadequate methods generally pursued, with suggestions for improvements. 2500 w. Ir Trd Rev-Dec. 26, 1912. No. 38538.

Silesia

A Statistical Statement of the Iron Industry of Upper Silesia for 50 Years (50 Jahre oberschlesischer Eisenindustrie in statistischer Darstellung). Ernst Jüngst. Charts and tables showing increased production along all lines during the period. 35 pp., Glückauf—Aug. 30, 1913. No. 45399 D.

The Function of Slag in Electric Steel-Refining. Richard Amberg. Discusses the points in which the chemical action of the slag of the electric differs from the corresponding slags of other processes. 4500 w. Bul Am Inst of Min Engrs. -Feb., 1913 No. 40160 F.

Foundry Pig Iron Smelted in Electric Foundry Fig from Smelter in Electric Furnaces. Illustrated description of the operations of the Noble Electric Steel Co., at Heroult, Cal. 3000 w. Ir Trd Rev—Sept. 18, 1913. No. 45201.

Iron Smelting in Maryland in the 18th Century. Henry Williams Lewis. An

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Spain

Iron Deposits and Industry at Bilbao (Die Eisenerzlager und die Eisenindustrie von Bilbao). E. Dann. A general description of the geology and mining methods in this old Spanish district. Ills. Serial, 1st part. 2300 w. Stahl u Eisen—July 17, 1913. No. 44605 D.

Steel Mills

Design of Steel Mill Buildings. Fleming. A review and discussion of the considerations governing their general features, proportioning and detailing. 5500 w. Eng Rec.—Oct. 25, 1913. Serial, 1st part. No. 46210.

How a German Iron and Steel Plant Is Equipped. Anton Schwartz. Illustrated description of the Rheinische Stahl-werke, which include blast furnaces, Bessemer converters, rolling mills and a by-product coke plant. 1700 w. Ir Trd Rev—Oct. 16, 1913. No. 45910.

Working Conditions and Efficiency in

American Steel Works as Affected by the Speed and Severity of the Work. From a report on "Conditions of Employment in the Iron and Steel Industry in the United States," presented to the U. S. Senate. 4500 w. Ir & Coal Trds Rev.—Oct. 10, 1913. Serial, 1st part. No. 45991 A.

Steel Plants

The Steel_Trust (Le trust de l'acier). Eugéne L. Dupuy. An account of the holdings, operation and organization of

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Steels

the United States Steel Corporation. 4000 Rev de Metal — April, 1913. 41516 H.

Design of Structural Steel Plant. E. H. Darling. Discusses the general conditions controlling the design of a plant of 10000 tons a year capacity. Ap Sci—June, 1913. No. 43766 C. 7500 w.

Steel Properties

The Influence of Mechanical Working on the Properties of Iron and Steel (Ueber den Einfluss der mechanischen Formgebung auf die Eigenschaften von Eisen und Stahl). P. Goerens. Results from rolling, etc., on elasticity, hardness, specific weight, magnetic and electric properties, structure, etc. Ills. 4200 w. Stahl u Eisen — March 13, 1913. No. 41404 D.

Material Changes Due to Cold Rolling (Ueber Materialveränderung durch Kaltwalzen). H. Hanemann and Ch. Lind. A micrographical study of structural changes in sheet steel. Ills. 2400 w. changes in sheet steel. Stahl u Eisen — April 3, 1913. 41411 D.

Cementation of Steel by the Use of Gases. Reviews an article by Franz Kurek in Stahl und Eisen, giving results of experiments with carbon monoxide, methane with ammonia gas and illuminating gas. Ills. 1500 w. Ir Age—Dec. 19, 1912. No. 38275 C.
The Action of Various Commercial

Carbonizing-Materials. Robert R. Abbott. Reports an investigation undertaken to compare most of the important commercial carbonizers as to cost of carbonizing. rapidity, and the nature of the carbonzones. 8000 w. Bul Am Inst of Min Engrs—Dec., 1912. No. 38369 F.

The Cause of Piping and Its Relation to Contraction and Charge (Die Ursachen der Lunkerung und ihr Zusammenha mit Schwindung und Gattierung). A. Diefenthäler. Experiments and studies. Stahl u Eisen-Oct. 31, Ills. 3500 w.

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Zinc Smelting

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Churn Drilling

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Drilling

Churn Drilling

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or artesian wells. Ills. 7500 w. De Ingenieur—Aug. 16, 1913. No. 44697 D.

The Present Status of Deep Drilling Science (Der gegenwärtige Stand der Hochbohrtechnik). O. Dobbelstein. An account of recent experience with drills in Dortmund. Ills. Serial, 1st part. 2100 w. Glückauf—Aug. 9, 1913. No. 44621 D.

Rock-Drilling Economies. W. L. Saunders. Shows the importance of the rock-drill in industrial progress, traces its development, and illustrates and describes types of modern drills. 6500 w. Bul Am Inst of Min Engrs—Sept., 1913. No. 45463 F.

Diamond-Drilling at the Poderosa Mine. C. L. Severy. Explains conditions attending drilling a high altitude mine in Bolivia. 1600 w. Min & Sci Pr—Aug. 30, 1913. No. 44949.

See also Churn Drilling, under Mining.

Drills

Improvements in Rock Drills and Drill Sharpeners. P. B. McDonald. Describes old and new styles. Ills. 2000 w. Min & Engng Wld—Jan. 11, 1913. No. 37118.

Special American Drills for Deep Rock Cutting. Illustrated descriptions of the deep-hole traction drill and the churn drill. 2700 w. Engr, Lond—June 13, 1913. No. 43150 A.

Notes on Drills and Drilling. F. R. Parsons. Discusses the machine, grinding drills, drill grinding gauge, repairing shank ends, etc., in the present number. Ills. 1200 w. Mech Wld—June 20, 1913. Serial, 1st part. No. 43381 A.

Pneumatic Drills in Competition with Electric Drills. Describes the Fort Wayne, Pneumelectric and the Dulles-Baldwin electric drills used in the construction of the new Catskill aqueduct and the deep tunnels in the city of New York for the water supply. After a year's trial their use was abandoned and air drills installed. 2500 w. Sib Jour of Engng—Oct., 1913. No. 46292 C.

Mine and Tunnel Equipment. Charles

Mine and Tunnel Equipment. Charles A. Hirschberg. An account of improvements in mine drills and their operation. Ills. 1200 w. Compressed Air—April, 1913. No. 41211.

Earthquakes

Earthquakes in Mines. James Douglas. Reviews the history of earthquake activity in the St. Lawrence Valley, especially considering effects below the surface. 3000 w. Jour Can Min Inst—Vol. XIV. No. 42019 N.

See also Explosions, under Coal and Coke.

Earth Settlement

The Mechanical Action of Mining on the Retention of Rock (Die mechanischen Einwirkung des Abbaues auf das Verhalten des Gebirges). A. Eckardt. A study of the reaction taking place between mine workings and earth pressure, mine roofs being retained due to arch action in the overlying masses. Ills. Serial. 1st part. 5600 w. Glückauf—March 8, 1913. No. 41413 D.

Efficiency

Obtaining Efficiency in Mining. Ardre Formis. Shows that attention to drilling, shoveling, pumping, etc., will greatly reduce costs. 2500 w. Eng & Min Jour—Dec. 28, 1912. No. 38583.

Electric Hoisting

Tests on an Electrically Controlled Centrifugal Brake (Versuche mit einer elektrisch gesteuerten Fliehkraftbremse). Herr Kammerer. Description and discussion on the Becker Centrifugal Brake, especially adapted to hoists, cranes, etc. Ills. 3400 w. Zeitschr des Ver deutscher Ing—Nov. 30, 1912. No. 38452 D.

Electric Hoists

Electric Winding Engines. A. E. du Pasquier. Abstract of a paper read before the S. Wales Inst. of Engrs. Considers the more important principles underlying the selection and design of the most suitable type for any particular conditions. 3000 w. Elect'n, Lond—Nov. 15, 1912. No. 37808 A.

Discussion on "Electrical Control of a Large Mine Hoist," Pittsburgh, Pa., April 27, 1912. The paper by H. W. Cheney is discussed. 8000 w. Pro Am Inst of Elec Engrs—Nov., 1912. No. 37899 F.

Plant Costs and Operative Efficiency in Electrically Driven Mine Hoists (Anlage-kosten und Wirkungsgrad bei elektrisch betriebenen Hauptschachtfördermaschinen). Karl Meller. Comparative methods of determination. Diagrams. 2000 w. Glückauf—Oct. 19, 1912. No. 37411 D.

Electric Hoists for Mine Service. H. A. Russell. Read before the California Mines' Assn. Discusses the advantages and the selection of a motor, controlling apparatus, etc. Ills. 3000 w. Min & Sci

Pr-Feb. 8, 1913. 39849.

The Reconstruction of Electric Hoists Through the Introduction of A. C. Commutator Motors and Improved Safety and Control Devices (Die Neugestaltung der elektrischen Fördermaschine durch die Einführung des Wechselstrom-Kommutatormotors und neuartiger Sicherheits- und Steuereinrichtungen). Ludwig Thallmayer. Review of modern design. Ills. Serial, 1st part. 3300 w. Elek Kraft u Bahnen—Jan. 4, 1913. No. 40059 D.

Electric vs. Compressed Air Hoists. K. A. Pauly. A reply to Mr. Nordberg's discussion of a paper presented by the

Electric Power

writer at the Wilkes-Barre meeting of the Am. Inst. of Min. Engrs. Ills. 6000 w. Eng & Min Jour—March 29, 1913 No. 40954.

The Importance of Hoist Investigations. George E. Edwards. Observations on details to be considered in motor driven hoists. 2000 w. Min & Engng Wld—April 19, 1913. Serial. 1st part. No. 41361.

Recent Electric Hoists with Three-Phase Drive (Neuere Arten elektrischer Förderaaschinen mit Drehstromantrieb). Herr Masling. Describes recent types constructed by Siemens-Schuckert, and Brown, Boveri & Co. Ills. 5000 w. Glückauf—Dec. 7, 1912. No. 39004 D.

See also A. C. Motors, under Electrical Engineering, Dynamos and Motors.

Electric Power

Electricity in Metal Mining in Colorado. W. J. Canada. Illustrates and describes its use for driving hoists, pumps, drills, fans, railways and in various processes connected with the recovery of precious metal from ore. 4500 w. Elec Wld—Dec. 7, 1912. No. 38097.

The Thury System of Electrical Transmission of Power for Mines. Sydney F. Walker. Diagrams and explanation of the system and statement of its advantages. 3000 w. Ir & Coal Trds Rev—Feb. 7, 1913. No. 39922 A.

The Use of Electricity and Electrical Accidents in Mines. Information from a report of the Electrical Inspector of Mines in England. 2500 w. Elec Rev, Lond—Feb. 14, 1913. Serial, 1st part. No. 40115 A.

Main and Auxiliary Plants with Turbo-Machines for Mining Operations (Haupt-und Hilfsanlagen mit Turbo-maschinen in neuzeitlichen Grubenbetrieben). Ernst Blau. Reviews the application of turbo-motors, turbo-pumps, turbo-generators, turbo-compressors, etc., in mine-work. Ills. 2400 w. Elek u Masch—Jan. 26, 1913. No. 40058 D.

Electric Equipment, American Nettie Mine. T. A. Tefft. Describes the method of constructing the hydro-electric plant that furnishes power for this Colorado mine, giving results of efficiency tests. 2000 w. Eng & Min Jour—March 15, 1913. No. 40664.

Electricity in Mines. H. S. Webb. An explanation of what electricity is, its manifestations, positive and negative electricity, etc. 1000 w. Col Engr—March, 1913. Serial. 1st part. No. 40281 C. Electrical Plant of El Guindo Co.

Electrical Plant of El Guindo Co., Spain. C. A. Tupper. Describes the deposits and the general conditions under which the work is carried on, illustrating and describing the various plants. 2000 w. Min & Engng Wld—March 8, 1913. No. 40380.

Central Station Power for Mines. J. S. Jenks. Historical sketch of the West Penn system in regard to its electrical service in connection with coal mines. 2000 w. Pro Am Inst of Elec Engrs—April, 1913. No. 41676 F.

Use of High-Tension Direct-Current Thury System in Mines. Sidney F. Walker. Abstract of paper read before the Inst. of Elec. Engrs. (England). Describes the system and its applications. Ills. 3500 w. Elec Wld—April 12, 1913. No. 41191.

A Plea for the Use of High-Tension Constant Continuous Currents in Mines. Sydney F. Walker. Explains the advantages of the system, its economy, etc. 3500 w. Elec Rev, Lond—Dec. 27, 1912. No. 38863 A.

Application of Motors in Mining and Mill Installations in Colorado. W. J. Canada. Gives data on a number of actual installations in Colorado. The motor equipment of the various departments are given in tabular form. 1600 w. Elec Wld—April 5, 1913. No. 41109.

Electric Power at California Mines. Warren Aikens. Illustrates and describes plants operated by the Pacific Gas & Electric Co. 2000 w. Min & Engng Wld—April 26, 1913. Serial. 1st part. No. 41653.

Electric Power Installation at El Tigre, Sonora, Mexico. James W. Malcolmson. Explains conditions and the propositions considered in a study of the best manner to obtain power, describing the installation. 1800 w. Bul Am Inst of Min Engrs — April, 1913. No. 41660 F.

Power Supply on the Rand. A. E. Hadley. Abstract of a paper read before the Manchester Sec of the Inst. of Elec. Engrs. Describes the power stations, transmission system, protection arrangements, control, etc. Ills. 6000 w. Mech Engr—April 4, 1913. No. 41228 A.

The Application of Energy to Mining in the Coeur d'Alenes. J. B. Fisken. Reviews briefly the history of the application of electricity in mining, and especially in the Coeur d'Alene country. 4000 w. Bul Am Inst of Min Engrs—June, 1913. No. 43253 F.

Electrical Distribution for Mines. J. W. Anson. Abstract of a paper read before the S. African Inst. of Elec. Engrabels especially with mines which draw their energy from a transformer house which transforms current taken from the

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power supply into current suitable for use in the mine. 3000 w. Ir & Coal Trds Rev—Sept. 5, 1913. No. 45199 A.

• Use of Electricity in Mining in the Butte District. John Gillis. Considers briefly the principal applications of electric current in metal mining. 1000 w. Bul Am Inst of Min Engrs—Sept., 1913. No. 45467 F.

The Use of Electric Power in Mining Operations. S. Rice. Explains how central power stations in the coal and coke districts of Penn. effect operating economies, with details of the Ebensburg Coal Co.'s plant. 3000 w. Ir Trd Rev-Sept.

25, 1913. No. 45438.

Application of Electric Power to Mining C. A. Tupper. Illustrates and describes recent development in the use of high speed air compressors and synchronous motors on the Lake Superior ranges. 3000 w. Ir Trd Rev—Jan. 2, 1913. (Spe-No. 38740 D. cial.)

See also Electric Power, under Coal. and Coke, and under Gold and Silver; Mine Pumps, under Mining; and Safety Appliances, under ELECTRICAL ENGINEER-

ING, Transmission.

Enrichment

An Example of Secondary Enrichment. W. F. A. Thomae. Describes the ore deposit of the Cata Arroyo mine in the State of Zacatecas, Mexico. Ills. 2000 w. Inst of Min & Met, Bul 109—Oct. 9, 1913. No. 46391 N.

Secondary Enrichment in the Caledonia Mine, Cœur D'Alene District, Idaho. Earl V. Shannon. The mine has yielded considerable high grade silver, copper and lead ore. Notes on the changes of the character of the ores with depth. 200 w. Ec-Geol—Sept., 1913. No. 45827 D.

Exhibition

The Mining Exhibition at the Agricultural Hall, Islington, London. Brief account of the opening, with illustrated description of the exhibits. 20000 w. Ir & Coal Trds Rev—May 30, 1913. (Supplement.) Serial. 1st part. No. 42790 Å.

Experimental Station

The Westphalian Experimental Station at Derne. Messrs. Beyling and Zix. From Glückauf. Description of the new testing station and its equipment. Ills. 2700 w. Col Guard-April 4, 1913. No.

41236 A.
The Testing Gallery at Derne (Die Versuchsstreckenanlage in Derne). Herrn Beyling and Zix. An experimental gallery of connected large iron pipes for determining the force of explosives, and other purposes. Ills. 4900 w. Glückauf -March 22, 1913. No. 41417 D.

Exploration

An Electrodynamic Method for Exploring the Earth's Crust (Eine elektrodyna-

mische Methode zur Erforschung des Erdinnern). Heinrich Löwy and G. Leimbach. Report of some interesting under-ground wireless experiments. Ills. Serial. 1st part. 1400 w. Oest Zeit f Berg u Hüttenwesen—Nov. 2, 1912. No. 38413 D.

Explosions

Gaseous Explosions. Presented to Sec. G. of the British Assn., Sept. 5, 1912. Fifth report of the Committee appointed for the investigation of gaseous explosions, with special reference to temperature. 5000 w. Engng—Nov. 8, 1912. No. 37643 A.

The Prevention of Explosions in Mines. John Harger. Explains a method of preventing dust explosions and fires in mines and elsewhere by reducing the oxygen content and the addition of small per cents 1400 w. of carbon dioxide. Discussion. Trans Manchester Geol & Min Soc-Feb.. No. 39565 N.

See Stray Currents, under ELECTRICAL

ENGINEERING, Transmission.

Explosives

Storage of Explosives at Mines. requirements as explained in a memorandum issued by the Home Office. 2500 w.

Col Guard—Nov. 15, 1912. No. 37821 A.
Smokeless Powders and Explosives for Military Use. Odus C. Horney. scribes modern explosives and their manufacture. 7500 w. Pro Engrs' Club of Phila—Oct., 1912. No. 37711 D.

The Energy of Explosives. Dr. Walter O. Snelling. Aims to show that explosives suitable for certain work can be best selected through knowledge of the energy factors and energy requirements.

Discussion. Ills. 11000 w. Pro Engrs'
Soc of W Penn—Nov., 1912. No. 38397 D.

Monobel and Carbonite. Information

concerning "permissible explosives" and the circumstances to which each is suited. Mines & Min-Dec., 1912. No. 2400 w. 38005 C.

Explosives. J. K. Moore. Discusses different types of explosives, their efficient use, and details of the proper handling.

3500 w. Can Engr — April 3, 1913. Serial. 1st part. No. 41100. The Selection of Explosives Used in Engineering and Mining Operations. Clarence Hall and Spencer P. Howell. Deals with the characteristics of the principal explosives used, and especially with tests that show the suitability of different classes of explosives for different kinds of work. Ills. 50 pp. U S Bureau of Mines—Bul 48. No. 41399 N.

The Testing of Safety Explosives. Vivian B. Lewes. Critical discussion of present regulations for testing and the nature and characteristics of explosives

Explosives. MINING Geology

that pass the permitted list. General discussion. 10000 w. Jour Soc of Arts—April 4, 1913. No. 41218 A. "Ignitions" and "Explosions." Summary

"Ignitions" and "Explosions." Summary of evidence given in an important test case in Scotland. 3500 w. Col Guard—March 28, 1913. No. 41141 A.

Modern Explosives and Their Use. F. H. Gunsolus. Brief outline of the history of explosives and their testing. Discussion. 3500 w. Jour Cleveland Engng Soc—May, 1913. No. 42432 D.

Permissible Explosives Tested Prior to March 1, 1913. Clarence Hall. Gives definition of permissible explosives and list. 1500 w. U S Bureau of Mines— Tech. paper 52. No. 43293 N. On a Modified Form of Stability Test

On a Modified Form of Stability Test for Smokeless Powder and Similar Materials. H. C. P. Weber. An investigation of the explosion temperature. 2000 w. Bul Bureau of Stand—March 15, 1913. No. 42935 N.

Note on the Quantitative Determination of Nitrous Fumes in Firing (Cheesa) Sticks. Dr. L. Heymann. Explains methods for the determination of nitrous fumes. Discussion. 2200 w. Jour Chem, Met & Min Soc of S Africa —April, 1913. No. 42870 E.

The Analysis of Black Powder and Dynamite. Walter O. Snelling and C. G. Storm. Outlines the methods of analysis used by the U. S. Bureau of Mines in the examination of certain classes of explosives. Ills. 80 pp. U S Bureau of Mines—Bul. 51. No. 43615 N.

The Testing of Explosives. A memorandum issued in regard to the test of explosives for inclusion in the Permitted List. 3000 w. Col Guard—Aug. 15, 1913. No. 44721 A.

Explosives Testing Station at Rotherham. Describes the gallery, gas connections, the gun, and the test. Ills. 3000 w. Ir & Coal Trds Rev—Aug. 15, 1913. No. 44734 A.

The Effect of Incombustible Dusts on the Explosion of Gases. H. B. Dixon and Colin Campbell. Evidence seems to show that such dust has a quenching effect. 3300 w. Sci Am Sup—Aug. 23, 1913. No. 44503.

External Stemming with Incombustible Dust. V. Watteyne and E. Lemaire. From Ann. de Mines de Belgique. Describes the method of external stemming and the occurrence of blow-out shots, and successful shots. Ills. 2500 w. Ir & Coal Trds Rev—Aug. 15, 1913. No. 44733 A.

Belgian Shot-Firing Experiments. Illustrated reports of further tests with external tamping. 2500 w. Col Guard—

Aug. 15, 1913. No. 44720 A. See also Detonators, under *Mining*.

Filling

Filling of Mine Stopes with Mill Tailings. W. H. Storms. Explains what has been accomplished in other countries, and how to convey the sand. 3500 w. Min & Engng Wld—Jan. 18, 1913. No. 39234.

Sand Available for Filling Mine Workings in the Northern Anthracite Basin of Pennsylvania. N. H. Darton. Observations concerning the character and distribution of the unconsolidated materials available. Ills. 33 pp. U S Bureau of Mines—Bul 45. No. 40414 N.

Fire Protection

Fire Protection Above and Below Ground. G. E. Lyman. A summary of methods used in fireproofing mines. Ills. 2200 w. Coal Age—May 17, 1913. No. 42207.

Fire Protection and Fireproofing in Mines. Herbert M. Wilson. Remarks on the heavy loss of life and property through mine fires; and discussion of methods of fireproofing, and related subjects. 2500 w. Min & Sci Pr—May 24, 1913. No. 42511.

Fires

Causes of Fires in Metal Mines. T. A. Tefft. The extensive use of timber furnishes conditions for dangerous fires. Methods of extinguishing are briefly considered. 2500 w. Mines & Min—Nov., 1912. No. 37191 C.

Forestry

Forestry and Related Mining. Frank D. Rash. Read before the Kentucky Min. Inst. Gives the experience of St. Bernard Mining Co. in planting different kinds of trees in Kentucky. 1500 w. Col Engr—April, 1913. No. 40975 C.

Framing

Rocker Timber-Framing Plant of Anaconda Co. Claude T. Rice. Illustrated description of plant and its equipment. 2500 w. Min & Engng Wld—March 1, 1913. No. 40298.

Erection of MacNamara Head-Frame. Herbert Haas. Illustrated description of the erection. 2000 w. Min & Sci Pr— March 1, 1913. No. 40323.

Geology

Depths and Continuity of Fissure Veins and Their Ore. Arthur Lakes. Illustrated explanation of such veins and information concerning their phenomena. 2500 w. Min & Engng Wld—Dec. 14, 1912. No. 38210.

Relation of Shearage Zones and Mineral Veins. Arthur Lakes. Illustrated explanation of shearage zones and veins crossed by such disturbances. 1100 w.

Headgears

Min & Engng Wld-Nov. 30, 1912. No.

A Review of the Existing Hypotheses on the Origin of the Secondary Silicate Zones at the Contacts of Intrusion with Limestones. W. L. Uglow. Reviews available literature on this subject and the evidence supporting the two opposing hypotheses. 7500 w. Ec-Geol — Jan., 1913. Serial, 1st part. No. 39952 D. "Chimney" or "Pipe" Deposits in the Porphyries. Walter Harvey Weew. Il-

lustrated descriptions of such deposits. 3000 w. Min & Engng Wld-Feb. 22,

1913. No. 39985.

Graphics Applied to Fault Problems. E. R. Rice. Shows that given sufficient data, the degree and direction of the movement may be ascertained. 2500 w. Eng & Min Jour-March 22, 1913. No. 40756.

The Ultimate Source of Metals. Blarney Stevens. Reviews the theories and explanations advanced to account for the distribution of metals. 4000 w. Bul Am Inst of Min Engrs-March, 1913. No. 40889 F.

Replacement Deposits in the Ajax Mine. E. A. Colburn, Jr. Describes the large replacement orebodies and interesting geological occurrences. Plans. 2000 w. Eng & Min Jour — April 12, 1913. No. 41187.

Elements of Field Geology and Geological Surveying. James Park. Suggestions for the field geologist, describing necessary field equipment, field procedure, observations, etc. 6000 w. Aust Min Stand—April 10, 1918. No. 42259 B.

The Dispersion of Metals. Lynde P. Wheeler. An examination of available data on the dispersion of silver, copper, gold, nickel, and cobalt, with conclusions. 5000 w. Am Jour of Sci-May, 1913. No. 42423 D.

Successive Phases of Mineralization in Veins of Volcanic Regions. Waldemar Lindgren. Describes replacements observed. 1600 w. Jour Can Min Inst—Vol. XV. No. 42042 N.

Searching for Oreshoots in Veins. George E. Collins. Part of an address delivered before the Colo. Sci. Soc. A discussion of the value of geologic theories as guides in exploration. 4500 w. Eng & Min Jour—May 10, 1913. No. 41960.

Graphical Determination of Dip and Strike. R. Clyde Cameron. Considers finding the dip and strike of a vein graphically with the elevations of the projected points shown by contour lines. Ills. 800 w. Min & Sci Pr-May 31, 1913. No. 42619.

The Laws of Jointing. Blarney Stevens. A full explanation of the phenomena of rock jointing, accounted for, to a large extent, by water pressure in the rock pores. Ills. 5800 w. Bul Am Inst Min Engrs—July, 1913. No. 44018 F.

The Formation of Metalliferous De-

posits. Extracts from a lecture delivered to the Societé de l'Industrie Minerale discussing the genesis of mineral deposits. 2000 w. Min Jour—June 28, 1913. No. 43628 A.

Economic Geology of the Berea Sandstone Formation of Northern Ohio. Wil bur Greeley Burroughs. A study of the Berea sandstone of Ohio, methods of quarrying, economic development, etc. 4500 w. Ec-Geol-Aug., 1913. 44383 D.

See also Microscopy, under Mining.

Haulage

The Haulage Installation at the Mines of Friedenshütte, Upper Silesia (Förder-einrichtungen der Friedensgrube in Frie-denshütte, O.-S.). O. Putz. The layout of the workings, locomotive installation, compressor plant, etc. Ills. 3000 w. Glückauf—Aug. 30, 1913. No. 45394 D. Compressed-Air Mine Haulage. Will-

iam Z. Price. Discussion of the system, method of charging, and the operation of air locomotives at Maple Hill Colliery. Ills. 2500 w. Col Engr-Oct., 1913. No.

45638 C.

Slope Haulage at Sayreton, Alabama. F. G. Morris. Methods of construction and operation are described by which a record production has been obtained on a slope 5,510 feet long. 1200 w. Col Engr -Oct., 1913. No. 45642 C.

Rope Haulage at Vesta No. 4 Mine. William Z. Price. Illustrated description of the system in operation at California, Pa., having a capacity of 6000 tons per 2000 w. Col Engr-Oct., 1913. day. No. 45636 C

Practical Mule Haulage. A. E. Thompson. Discusses conditions under which mule haulage is economical. 1500 w. Col

Engr—Oct., 1913. No. 45646 C.
Animal Haulage in Mines. Beverley S. Randolph. Information concerning the type of mule which experience has shown to be most economical. Ills. 2500 w.

Col Engr—Oct., 1913. No. 45637 C. See also Mine Locomotives, under Mining.

Headframes

Types of Headframes. H. L. Botsford. Illustrates and describes types. 1200 w. Eng & Min Jour-Oct. 11, 1913. No. 45805.

Headgears

Notes on Headgears for Collieries and Other Mines. F. Tissington. Illustrated

Hydraulic Mining

detailed description of the development and types and matters related. 3500 w. Can Engr-Feb. 20, 1913. No. 39969.

Hoisting

Compressed-Air Hoisting at Butte. Thomas T. Read. Diagrams and description of the hoisting shafts of the Anaconda Copper Mining Co. and the compressed air system. 1700 w. Min & Sci Pr—Nov. 2, 1912. No. 37810.

Hoisting Practice in Wisconsin Zinc Fields. W. F. Boericke. Describes the

arrangements for bucket hoisting. w. Eng & Min Jour—Jan. 4, 1913.

38810.

See also Ore Handling, under MECHAN-ICAL ENGINEERING, Transporting and Conveying, and Electric Hoists and Winding Engines, under Mining.

Hoisting Buckets

Four-Decked Cage at St. Michael. Describes a new method of hoisting coal which admits of rapid handling of the cars and gives large capacity to the shaft. Ills. 2000 w. Col Engr—Aug., 1913. No. 44117 C.

Hoisting Buckets or Skips in German Mining (Die Gefäss-Schachtförderung, Skipförderung, und der deutsche Berg-bau). Herr Herbst. Describes various German arrangements of mine superstructure for the handling of the buckets. Ills. Serial, 1st part. 4200 w. Glückauf —Aug. 2, 1913. No. 44619 D.

Mechanical Charging Devices for Hoist Buckets (Maschinelle Beschickungsvorrichtungen für Förderkörbe). Herr Wintermeyer. Detailed description of several devices being exploited in Germany. Ills. 2600 w. Glückauf—Aug. 16, 1913.

No. 45384 D. **Hoisting Cables**

Hoisting Cables for Deep Mines (Die Förderseile für grosse Schachtteufen). F. Baumann. Sizes and weights of cables for varying denths with a factor of safety of 6. Diagrams. 2800 w. Glückauf—Oct. 4, 1913. No. 46009 D.

Hoisting Cages

Parachute Hoisting Cages (Les Parachutes de Cages d' Extraction). L. Crus-Describes systems of automatic safety catches for hoisting cages. Ills. Serial. 1st part. 5400 w. Tech Mod— Serial. 1st part. 5400 w. Dec. 1, 1912. No. 38488 D.

Hoisting Engines

Air-Balanced Hoisting Engine. R. H. Corbett. Illustrated description of a device for which the power developed by the descending skip compresses air to be used in hoisting. 1600 w. Nov., 1912. No. 37192 C. 1600 w. Mines & Min-

Apparatus for Control of Over-Speeding and Over-Winding in Winding En-

gines. From the report of the W. Aust. Dept. of Mines. Particulars of some appliances recently introduced for prevention of undue speed. Ills. 4000 w. Can Min Jour—Nov. 1, 1912. No. 37276.

Charts for Hoisting Engines with Series-Wound Motor Drive (Zeichnerische Diagrammermittlung für Fördermaschinen mit Antrieb durch Reihenschlussmotoren). Gregor Trefler and Fritz Nettel. Considers hoisting engines with driving pulleys and cylindrical and conical drums. Charts. Serial, 1st part. 4900 w. Zeit des Ver deutscher Ing—June 14, 1913. No. 43530 D.

See Safety Devices, under Mining.

Hoisting Ropes

Rope Safety in Shaft Hoisting (Seilsicherheit bei der Schachtförderung). D. Tabulated data on the al-F. Baumann. lowable factor of safety of ropes of varying sizes and lengths. Charts. 2400 w. Glückauf-Dec. 14, 1912. No. 39006 D.

Prussian Statistics on Mine Cables for 1911 (Ergebnisse der preussischen Seilstatistik für das Jahr 1911). F. Bürklein. Report on tests made at the various stations. Ills. Serial. 1st part. 3500 w. Glückauf—April 5, 1913. No. 41421 D.

Hoists

Automatic Closing Device, System "Karlík-Náhlík," for Inclined Hoists in Rossitz-Oslawaner Coal District (Selbstättige Absperrvorrichtung, System "Karlík-Náhlík," für tonnlägige Förderung im Rossitz-Oslawaner Steinkohlenreviere). Julian Czaplinski. A bar at the level opening, automatically placed in the absence of the bucket skip. Ills. 1500 w. Oest Zeit f Berg u Hutten—Aug. 9, 1913. No. 44623 D.

The Electric Mine Hoist at Shaft II of the Rheinpreussen Homberg Mine on the Rhine (Elektrische Hauptschachtfördermaschine auf Schacht II der Zeche Rheinpreussen Homberg a. Rh.). W. Philippi. Details of the main hoist in use. Ills. 5000 w. Elek Kraft u Bahnen—July 24,

1913. No. 44682 D.

Electric-Driven Mine Hoists with Turbine-Driven Starting Motors trisch betriebene Hauptschacht-Fördermaschinen mit Dampf-turbinenantrieb der Anlassdynamo). Ērnst Blau. General description and uses of combination machinery. Ills. Serial, 1st part. 2800 w. Elek u Masch-Sept. 7, 1913. 46079 D.

Hydraulic Mining

Principles of Hydraulic Mining. H. L. Mead. Outlines the different types of gravel deposits and describes methods of

Laws

working. Ills. 4000 w. Sch of Mines Qr—April, 1913. No. 41693 D.

Hydraulic Elevator Work on Anvil Creek, Nome, Alaska. C. W. Purington. Illustrates and describes the handling of unfrozen gravel by the hydraulic nozzle with the accompaniment of the hydraulic lift and tailing nozzle. 2000 w. Min & Sci Pr—April 26, 1913. No. 41807.

A Study of riffles for Hydraulicking. Pierre Bouery. Gives results of experiments made to determine saving capacities. Ills. 3500 w. Eng & Min Jour-May 24, 1913. No. 42383.

Hygiene

Health and Living Conditions on Rand Mines. Describes conditions and discusses improvements still needed. 2500 w. S African Min Jour—Sept., 1912. (Special.) No. 37869 N. Miners' Phthisis on the Rand. Freder-

ick L. Hoffman. Report of the miners' phthisis commission for the government of the Union of South Africa. 3000 w. Eng & Min Jour—Nov. 30, 1912. Serial

1st part. No. 37961.
The Sanitation of Mining Towns. J. H. White. Excerpts from an address before the senior sanitary engineers, University of Pittsburgh. 2200 w. Eng & Min Jour—July 12, 1913. No. 43667. See also Miner's Baths, under Mining,

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Illinois

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Investigations on Mining Machinery (Untersuchungen von Bergwerksmas-

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Topographic Maps for the Mining Engineer. E. G. Woodruff. Outlines a few of the uncommon relationships which topographic maps and structure-contour maps have to modern methods of mining investigation and development. Ills. 3000 w. Bul Am Inst of Min Engrs—June, 1913. No. 43251 F.

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Mining Methods in the Waihi Mine. Jas. L. Gilmour and W. H. Johnston. Describes the systems used in extracting ore. Ills. 4500 w. Min & Sci Pr—Dec. 21, 1912. No. 38548.

The Wellesley Colliery of the Wemyss Coal Co., Ltd. Jas. D. Welch. Read before the Scottish Fed. Inst. of Min. Students. Drawings and description of methods adopted at a large plant capable of dealing with 4000 tons per day. 2000 w. Ir & Coal Trds Rev—Dec. 18, 1912. No. 38535 A.

Operations of the Davidson Ore Mining Co., Mich. George E. Edwards. Describes equipment and arrangements. A partial use of electric power. 2500 w. Min & Engng Wld—Jan. 11, 1913. No. 39117.

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A Problem in Mining, Together with Some Data on Tunnel Driving. F. M. Simonds and E. Z. Burns. Explains the problem encountered in developing the Rawley property in Colorado, and the solution by tunnel driving, with costs. 9000 w. Bul Am Inst of Min Engrs—March, 1913. No. 40893 F.

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Proposed Method of Longwall Mining. F. C. Cornet. Describes a method proposed for working the lower Kitanning seam, in the northern part of W. Va. Ills. 2500 w. Coal Age—July 26, 1913. No. 43920.

Mining the Wide Ore Bodies at Butte. Claude T. Rice. Describes the practice in the Leonard mine in the Meaderville part of the district, commenting upon the general mining practice. Ills. 3000 w. Min & Engng Wid—Aug. 2, 1913. Serial, 1st part. No. 44138.

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Factors Affecting Choice of Mining & Method. E. M. Weston. Brief discussion of things to be considered, and available methods of exploration and development. 2500 w. Eng & Min Jour—Sept. 20, 1913. No. 45263.

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The Use of the Microscope in Mining Engineering. Frederick W. Apgar. Explains the uses to which the microscope may be applied and its value in research work. Ills. 4000 w. Bul Am Inst of Min Engrs—June, 1913. No. 43252 F.

Microscopy in Economic Geology. R. Beck. Translation of an address made on the occasion of Prof. Beck's inauguration as rector of the Royal School of Mines at Freiberg, Saxony. Explains the influences of microscopic study on the influences of microscopic study on the development of economic geologic theories. 3000 w. Eng & Min Jour—May 31, 1913. No. 42641.

Mine Air

Determining the Methane Content in Air Tests by the Aid of a Portable Interferometer (Die Bestimmung des Methangehaltes der Wetterproben mit Hilfe des tragbaren Interferometers). E. Küppers. Describes the gas interferometers and explains uses. Ills. 2100 w. Glükkauf—Jan. 11, 1913. No. 40011 D.

Mine Buildings

The Construction of Mine Buildings Not Liable to Failure (Uber die Durchbildung von Bauten zur Verhütung von Bergschäden). Herr Elwitz. Discussion and plans for building to resist shocks and strains. Ills. 4900 w. Glückauf—Feb. 22, 1913. No. 40514 D.

Mine Calculations

Formulas and Their Use. An explanation of the signs and symbols employed in mining calculations. 1800 w. Col Engr—March, 1913. No. 40278 C.

Mine Cars

Mine Slope Economizing Hand Labor. John J. Smith. Describes a single-track mine slope designed to minimize hand shifting of cars. Ills. 4000 w. Eng & Min Jour—Dec. 21, 1912. No. 38351.

Mine Effects

See same heading, under CIVIL ENGINEERING, Municipal.

Mine Examination

The London Mine, Mosquito Mining District, Park County, Colo. Charles J. Moore. Gives result of a recent examination requiring unusual geologic investigation. Describes the topography and geology, ore deposits, etc. Ills. 3500 w. Bul Am Inst of Min Engrs—March, 1913. No. 40896 F.

Mine Fires

Mine Fires and How to Fight Them. James W. Paul. Calls attention to methods of preventing fire in a mine and for quickly getting it under control. 4500 w. U S Bureau of Mines—Miners' Circ. 10. No. 38671 N.

Mine Fires and Their Prevention. Herbert M. Wilson. Address before the Min. & Fuel Conference, Urbana, Ill. Reviews what has been done toward solving this problem. Ills. 2500 w. Sci Am Sup—

June 28, 1913. No. 43201.

Mine Lamps

Oil Versus Electric and Spirit Lamps. E. A. Hailwood. Remarks on the safety of different mine lamps, giving results of recent tests. 2500 w. Ir & Coal Trds Rev—Nov. 29, 1912. No. 38139 A.

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Miners' Electric Lamps. William Maurice. Lecture delivered at the University College, Nottingham. Considers types, the explosion and accident risks, lighting and nystagmus, recent tests, etc. 4000 w. Ir & Coal Trds Rev—April 4, 1913. Serial. 1st part. No. 41249 A.

Acetylene Lamps in Mines. R. Cremer. Refers to the types of mine lamps in general use, and reviews the history of acetylene mine lamps. Ills. 4000 w. Min Jour—March 22, 1913. Serial. 1st part. No. 41004 A.

The Lighting Efficiency of Safety Lamps. T. A. Saint. Read before the N. of England Inst. of Min. & Mech. Engrs. Report of an investigation of standard patterns. 1200 w. Ir & Coal Trds Rev—May 2, 1913. No. 42254 A. Portable Electric Mine Lamps. H. H.

Portable Electric Mine Lamps. H. H. Clark. Discusses the use of such lamps, pointing out certain advantages and suggesting some characteristics that they ought to have. 3000 w. U S Bureau of Mines—Tech paper 47. No. 44484 N. Acetylene Lamps in Coal Mines. Re-

Acetylene Lamps in Coal Mines. Reports tests of carbide lamps, and oil lamps to show their behavior in atmospheres containing carbon dioxide. 1500 w. Col Engr.—Aug., 1913. No. 44122 C. Approved Safety Lamps. Gives the

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conditions specified in the Patterson lamp types. Ills. 2000 w. Col Guard—Aug. 8, 1913. No. 44456 A.

The Use and Care of Miners' Safety

Lamps. James W. Paul. Discusses the use and care of common types of miners'

use and care of common types of miners' safety lamps. Ills. 5000 w. U S Bureau of Mines—Circ. 12. No. 45093 N.

Approved Safety Lamps for Mines. Gives order dated 26th of Aug., 1913, approving certain types of safety lamps for use in mines. Ills. 5000 w. Col Guard—Sept. 12, 1913. Serial, 1st part. No. 45096 A 45296 A.

Mine Locomotives

Experience on the Road. G. W. Hamilton. Explains how to unload and place a mine locomotive in service. 30 Elec Jour—Dec., 1912. No. 38628. 3000 w.

Experiments on Compressed-Air Tunnel Locomotives (Untersuchung an Tun-nel-Druckluftlokomotiven). V. Litz. Describes locomotives and gives tabulated results on the performance of small and large types. Ills. 4900 w. Glückauf—Nov. 9, 1912. No. 38415 D.

The Modern Mine Locomotive. H. K. Hardcastle. Illustrated description of the modern electric mine locomotive. 1600 w.

Elec Jour-March, 1913. No. 40873. Compressed-Air Pit Locomotives. Giller. From a paper read before the Ruhr Dist. Sec. of the Soc. of German Engrs. Illustrated description of compressed air mine locomotives, showing progress made. 2500 w. Col Guard—May 23, 1913. No. 42753 A.

Internal Combustion Mine Locomotives. John Tyssowski. Illustrates and describes features of construction of the principal American-made gasoline locomotives. 2500 w. Eng & Min Jour-Aug. 23, 1913. No. 44552.

The Storage Battery Locomotive. Arvid R. Anderson. Considers its application for mine haulage, and the method of calculating the size of locomotive and battery needed. Ills. 3500 w. Col Engr—Oct., 1913. No. 45639 C.
Gasoline Mine Locomotives. Carl

Reports satisfactory use for mine haulage. 1500 w. Col Engr-Oct., 1913. No. 45641 C.

Gasoline Motors in Coal Mines. A. J. King. Discusses the conditions under which they may be used and the extent to which they vitiate the air. Ills. 1000 w. Col Engr—Oct., 1913. No. 45645 C.

See also Locomotives (Electric), under RAILWAY ENGINEERING, Motive Power and Equipment.

Mine Motor

The History of the Gasoline Mine Motor. R. O. Hodges. Describes early attempts to meet the requirements. w. Coal Age-July 19, 1913. Serial, 1st part. No. 43813.

Mine Power

The Development of Mechanical Power in the Mines of the Northeastern Coalfield: A Comparison and a Contrast. Robert Nelson. Read before the Assn. of Min. Elec. Engrs. Reviews the important part mechanical power has played, considering its use in the 18th, 19th and present centuries. 5500 w. Ir & Coal Trds Rev—Feb. 21, 1913. No. 40320 A.

A Note on the Comparative Efficiencies of Compressed Air versus Hydraulic Power for Mining Operations. G. A. Denny. 4000 w. Can Min Jour—May 15, 1913. No. 42847.

The Production, Transmission and Application of Power at Collieries in Scotland. W. H. Telfer. Read before the Nat. Assn. of Col. Mgrs. and the Assn. of Min. Elec. Engrs. Considers various sources of power and methods of power transmission. 5500 w. Ir & Coal Trds Rev—May 23, 1913. No. 42761 A.

See also Electric Power, under Mining.

Some Novel Devices in Connection with Electrical Pumping Installations in Mines. R. Herzfeld. From a paper read before the Midland Inst. of Min., Civ., & Mech. Engrs. Describes features of an installation at the Dover Collieries. Ills. 2000 w. Col Guard — Jan. 31, 1913. No. 39792 A.

Some Novel Devices in Connection with Electrical Pumping Installations in Mines. R. Herzfeld. Abstract of paper read before the Inst. of Min. Engrs. A description of the electrical pumping plant installed at the Dover Collieries. 1200 w. Elect'n, Lond — Feb. 28, 1913. 40468 A.

Power Supply on the Rand. A. E. Hadley. Particulars are given of the Victoria Falls and Transvaal Power Co. and of the history of electric power sup-ply on the Rand. Ills. 10800 w. Inst of Elec Engrs—March, 1913. No. 40807 N. See also Electric Power, under *Mining*.

Miners' Baths

Baths for Miners. Gives the text of the new draft Regulations, and the report of the Departmental Committee. Ills. 5500 w. Col Guard—May 16, 1913. No. 42535 A.

Baths for Miners. William Walker. Notes on the character, accommodations and facilities provided in Wastphalia, Belgium, and France. 3500 w. Ir & Coal Trds Rev—July 11, 1913. 43906 A.

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Mine Switches

Safety Electric Switches for Mines. H. H. Clark. A study of the various means and methods used to confine the flashes that occur when such switches are operated. A brief review of the test results. 1500 w. US Bureau of Mines—Tech paper 44. No. 43760 N.

Mine Ties

The Use of Steel Ties in Mining. J.
Clark Evans. Read before the W. Va.
Coal Min. Inst. Summarizes the many
advantages of steel mine ties. 2500 w.
Coal Age—July 5, 1913. No. 43444.

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Mine Waters. A. C. Lane. Excerpt from the report to the Board of Geol. & Biol. Survey, Mich., 1909. Gives a summary of results of a study of the Lake Superior mine waters. 2000 w. Min & Sci Pr—Nov. 9, 1912. No. 37559.

Mining Bureau

The California State Mining Bureau. William H. Storms. Read before the Cal. Miners' Assn. An account of the creation of this State Mining Bureau, explaining its purpose. 3000 w. Min & Sci Pr—Dec. 28, 1912. No. 38764.

Mining Hazards

The Relative Hazard of All Vocations in Comparison with Mining. Hywel Davies. A plea for reliable statistics in all industries in regard to the loss of life on accidents. 3000 w. Pro Am Min Cong—1912. No. 46179 N.

Mining Plants

Installing a Mining Plant in Latin America. Edward W. Perry. An illustrated record of the troubles encountered. 2500 w. Engineering Magazine—Feb., 1913. No. 39428 B.

The Shaft Plants 8 and 9 of the Constantine the Great Mines (Die Schachtanlage VIII/IX der Zeche Constantin der Grosse). Herrn Illgen and Wollenweber. Plans and description of new electrical equipment for these mines near Bochum, Germany. Ills. Serial. 1st part. 6000 w. Glückauf—May 24, 1913. No. 43-008 D.

Nationalization

The Nationalization of Mines. Presents facts and considerations bearing upon State ownership of mines. 1000 w. Engr, Lond — May 9, 1913. No. 42292 A.

Ore Deposits

The Nature of Replacement. Waldemar Lindgren. Gives a summary of previous views, examines classes of replacement, porosity, crystallization, etc. 5000 w. Ec-Geol—Sept. 1912. No. 37668 D.

Persistence of Ore Deposits in Depth. Horace V. Winchell. Discusses conditions of ore deposition, precipitation, and the relation of depth to value. 2500 w. Min & Sci Pr—Aug. 30, 1913. No. 44947.

The Influence of Depth on the Character of Metalliferous Deposits. J. F. Kemp. Read before the Int. Geol. Cong. A summary of what has been learned with regard to the values of ores with increasing depth. 3000 w. Can Min Jour—Sept. 1, 1913. No. 44866.

Primary and Secondary Ores Considered With Especial Reference to the Gel and the Rich Heavy Metal Ores. P. Krusch. Read before the Int. Geol. Cong. Gives results of work at the Inst. of Ore Deposits, in Berlin. 6000 w. Min & Sci Pr—Sept. 13, 1913. No. 45242.

Influence of Flat Dike on Ore Formation. E. A. Colburn, Jr. Describes a rather unusual occurrence at Cripple Creek. 1200 w. Eng & Min Jour—Sept.

27, 1913. No. 45498.

Pipe Lines

Heavy-Duty Pipe Lines of Small Diameter. A. D. Akin. Detailed description of proper methods to be employed. 1500 w. Min & Engng Wld—April 12, 1913. Serial. 1st part. No. 41200.

Props and Beams in Mines. S. M. Dixon. From a paper read before the Concrete Inst. Discusses substitutes for timber, especially reinforced concrete, reporting tests. 2500 w. Col Guard — April 4, 1913. No. 41235 A.

Prospecting

The Treasury Tunnel Raise. H. Y. Russel. Describes work near Red Mountain, Colo., where a tunnel was driven in the vein for prospecting, but was subsequently to be trimmed and serve as a shaft. 3000 w. Eng & Min Jour—Dec. 14, 1912. No. 38194.

A Microscopist in the Field. Walter E. Koch. On the use of a simple form of microscope for studying minerals in place, explaining its value. 2500 w. Eng & Min Jour—Jan. 18, 1913. No. 39221.

Application of Genetic Theories to the Search for Ore. George E. Collins. Extract from presidential address before the Colo. Sci. Soc. Discusses the study of ore deposits, the importance of records, etc. 3000 w. Can Min Jour—Aug. 1, 1913. No. 44205.

Applied Geology, Michigan Iron Ranges. P. B. McDonald. Describes illustrated examples of successful and unsuccessful diamond drilling. 2000 w. Eng & Min Jour—Aug. 2, 1913. No. 44130.

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Difficulties of Pumping on the Comstock Lode. Whitman Symmes. Describes

Rescue Work

types of pumps in use and the work they are required to perform. 4000 w. Min & Engng Wld—Jan. 11, 1913. No. 89116.

Quarry Accidents

Quarry Accidents in the United States During the Calendar Year 1911. Albert H. Fay. Accident statistics with 23 tables. 500 w. U S Bureau of Mines— Tech Paper 46. No. 42448 N.

Quarrying
Mining by Wholesale. Thomas T.
Reed. Illustrated description of the
quarry and crushing plant at Tomkins
Cove, N. Y. 4000 w. Min & Sci Pr—
Sept. 6, 1913. No. 45065.

Rescue Apparatus

The New Westphalia Rescue Apparatus, Model 1912 (Der neue Westfalia-Rettungsapparat, Modell 1912). Herr Breyhan. Detailed description of new helmet, breathing apparatus and oxygen generators. Ills. 3000 w. Glückauf—Feb. 22, 1913. No. 40518 D.

Improvements in Oxygen Breathing Apparatus and Their Tests (Neuerungen auf dem Gebiet der Sauerstoff-Atmungsgeräte und damit angestellte Versuche). Herr Grahn. Details of the latest models of Dräger, Westphalian and Fleus pulmotors. Ills. 2200 w. Glückauf—Sept. 27, 1913. No. 46008 D.

Oxygen Breathing Apparatus with and Without Injectors (Ueber Sauerstoff-Atmungsgeräte mit und ohne Injektoren). Herr Forstmann. Describing action of pulmotors of both types. Ills. 2000 w. Glückauf—Sept. 27, 1913. No. 46007 D.

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Mine Rescue Appliances: A Danger Occurring in the Use of an Apparatus in Which an Injector is Employed. John Cadman. From an address before the S. Staffordshire and Warwickshire Inst. of Min. Engrs. Also discussion. 3000 w. Ir & Coal Trds Rev—Dec. 20, 1912. No. 38906 A.

Training with Mine-Rescue Breathing Apparatus. James W. Paul. Explains the methods of training recommended by the Bureau of Mines. 2500 w. U S Bureau of Mines—Tech. paper 29. No. 39506 N.

The Pulmotor in Mine Rescue Work. Henry E. Bertling. Describes this automatic resusciation apparatus. 1500 w. Can Min Jour—May 1, 1913. No. 41894. Resuscitation Appliances for Mine Res-

Resuscitation Appliances for Mine Rescue Service (Wiederbelebungsvorrichtungen für den Grubenrettungsdienst). Herr Breyhan. Describes several appliances for life saving work, and their operation. Ills. Serial. 1st part. 4500 w. Glückauf — April 26, 1913. No. 42118 D.

Method of Testing Draeger Oxygen Helmets at the Copper Queen Mine. C. A. Mitke. The gases causing failure of the helmets; test methods first tried, and final successful test methods used. Ills. 1000 w. Bul Am Inst Min Engrs—July, 1913. No. 44009 F.

Testing Appliances for Oxygen Breathing Apparatus (Prüfungsvorrichtungen für Sauerstoff-Atmungsgeräte). Dr. Forstmann. The design and operation of several devices for determining the efficiency of different rescue apparatus. Ills. 1700 w. Glückauf—Aug. 2, 1913. No. 44620 D.

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Mine Rescue Work in Canada. W. J. Dick. An account by provinces of the nature and extent of the mine-rescue work. 3000 w. Can Min Jour—Feb. 1, 1913. No. 39659.

The Organization of the Mine Rescue Service at the Imperial Mine Directory at Brüx in Northwest Bohemia and the Central Rescue Station at the Imperial Mine Julius III (Die Organisation des Grubenrettungsdienstes bei der K. K. Bergdirektion Brüx in Nordwestböhmen und die Zentral-Rettungsstation am K. K. Schachte Julius III). Gustav Ryba. The staff, outfit and station equipment at each place. Ills. Serial, 1st part. 2000 w. Oest Zeit f Berg u Hütten—Sept. 6, 1913. No. 45374 D.

Breathing Devices in Rescue Work in the Mines of Austria (Die Atmungsapparate im Rettungswesen beim österreichischen Bergbau). Wilhelm Pokorny. The rescue stations throughout Austrian mining districts and their work, and descriptions of the Draeger, Westfalia, Pneumatogen and Aerolith appliances, especially the two latter. Serial, 1st part. 4400 w. Oest Zeit f Berg u Hütten—Sept. 6, 1913. No. 45373 D.

First-Aid Instructions for Miners. M. W. Glasgow, W. A. Raudenbush and C. O. Roberts. A circular intended to serve as a guide to miners in rendering aid to injured workmen. Ills. 66 pp. U S Bureau of Mines—Miners' Circ 8. No. 46107 N.

Safety Provisions of Victor-American Fuel Co. F. W. Whiteside. Illustrates and describes precautions taken to prevent accidents. 1500 w. Coal Age—Oct. 11, 1913. No. 45784.

Organization and Management of the Mine Rescue Work in the District of the Third Section of the Co-operative Laborers' Societies at Clausthal in 1912 (Die Entwicklung und Handhabung des Grubenrettungswesens im Bezirk der Sektion 3 der knappschafts-Berufsgenossen-

Shaft Sinking

schaft zu Clausthal im Jahre 1912). Herr Breyhan. Plan and description of rescue station and training. Ills. 4800 w. Glückauf—Sept. 20, 1913. No. 46005 D.

Reinforcad Concrete for Roofing a Level. W. Fischer Wilkinson. Illustrated account of the use of concrete in mines, giving cost for work described. Ills. 2000 w. Mining Mag-Dec., 1912. No. 88637 B.

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System of Safety at the Cleveland-Cliffs Properties. William Conibear. Abstract of a paper read before the L. Superior Min. Inst. An account of the work of the Safety Inspection Department. 2000 Min & Engng Wld-Nov. 9, 1912. No. 37345.

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An Accident with Breathing Apparatus. (Ein Unfall mit Atmungsgeräten). Herr Forstmann. Details of a peculiar serious accident to a pulmotor Glückaufwhile in service. 1800 w. April 5, 1918. No. 41420 D.

See Explosions, under Coal and Coke.

Safety Lamps

Approved Safety Lamps. Gives the schedule describing the types of safety lamp and safety-lamp glass approved until further order. Ills. 1000 w. Col Guard—March 14, 1913. No. 40820 A. The Heating of Safety Lamp Gauges

in Fiery Atmospheres. From a report by Emmanuel Lemaire in the Ann. des Mines de Belgique, recording the results of experiments at the Frameries testing station. 2500 w. Col Guard—March 14, No. 40819 A. 1913.

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Sanitary Conditions in Mining Camps. Charles H. Hair. Suggests the best methods for ensuring sanitary conditions. Jour Can Min Inst-Vol XV. No. 42060 N.

Sanitation for Mine Locations. W. H. Moulton. Considers means of guarding the health of miners by sanitary work. 2000 w. L Superior Min Inst—Aug. 26,

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Concrete Shaft Station, Wolverine Mine. Claude T. Rice. Detailed description of concreting methods in a Michigan copper mine inclined shaft station. Ills. 1500 w. Eng & Min Jour—Aug. 30, 1913. No. 44889.

Safety Gates for Shafts. Brief illustrated description of automatic gate locking and operating devices for protection against accidents. 800 w. Col Engr-Oct., 1913. No. 45644 C.

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Shaft-Sinking

The Stockfisch System of Shaft-Sinking at the Diergardt Colliery. Herr Krecke. Plans and description of this system which requires no lining until the shaft is finished. 1200 w. Col Guard—Nov. 1, 1912. No. 37896 A.

Method and Cost of Constructing Concrete Lined Shaft by Sinking Through Overburden and Enlarging a Drift Raised Through Ledge Rock. Drawings and descriptions of work at the Negaunee mine, Michigan. 3000 w. Engng & Con—Jan. Michigan. No. 39328. 22, 1913.

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Results of Shaft Tubbing Experiments (Erfolge mit dem Senkschachtverfahrens). C. Beil. A review of tubbing methods employed experimentally, with costs, including sinking shoe, concrete lining, etc. Ills. 3500 w. March 4, 1913. No. 41412 D. Glückauf-

Rand Practice in Deep Shaft Sinking. Charles B. Brodigan. Lecture at Roy. Sch. of Mines, London. Considers the Problem of the Brakpan Mines, describing the equipment for sinking the work, etc. 4500 w. Min & Sci Pr—April 26, 1913. Serial. 1st part. No. 41806.

Notes on Sinking Operations at the Springs Mines, Transvaal. B. D. Bush-Describes new features in sinking ell.

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15, 1913. No. 43157 N.

Sinking Against Water on the Rand. Describes process of sinking a seven-compartment shaft on the Rand against a water flow of about 1300 gal. per minute. 1500 w. Eng & Min Jour—June 14, 1913. No. 42834.

Shaft-Sinking Methods of Butte. Norman B. Braly. Describes the present practice of shaft sinking in the Butte district. Ills. 4500 w. Bul Am Inst of Min Engrs—Aug., 1913. No. 44754 F.

Sinking a Circular Shaft. E. Mackay Heriot. Discusses the cost and speed of sinking, the surface plant, and the methods of placing masonry and concrete linings. Ills. 3500 w. Eng & Min Jour—Feb. 8, 1913. Serial, 1st part. No. 39739.

Signalling

Notes on Shaft Signalling with Special Reference to the Nodon Rectifier. T. Charlton. Read before the Assn. of Min. Elec. Engrs., Yorkshire Branch. Remarks on signals in use, with description of the rectifier. Diagrams. 2500 w. Ir & Coal Trds Rev—Nov. 8, 1912. No. 37654 A.

Shaft-Signalling Devices Operated from the Moving Cage. J. Kersten, in Ann. des Mines de Belgique. Illustrates and describes electrical, mechanical, and combined devices used in the Ostrau-Karwin district. 2000 w. Col Guard—Aug. 22, 1913. No. 44916 A.

Signals

Notes on Signals, Bells and Batteries. W. A. Heyes. Read before the Nat. Assn. of Col. Mgrs. Deals with the installation and upkeep of electric signaling systems at collieries. Discussion. 3500 w. Ir & Coal Trds Rev—May 9, 1913. No. 42299 A.

Signal Systems

Bell and Lamp Signal Systems. Sydney F. Walker. Discusses the difficulties encountered in mine signals. Ills. 1200 w. Elec Wld—Jan. 18, 1913. Serial. 1st part. No. 39231.

South Africa

Electrical Distribution for Mines. J. W. Anson. Abstract of a paper read before the S. African Inst. of Elec. Engrs. Describes the conditions likely to be met with upon installing electrical plant in the S. African Mines, and advises on the class of plant best able to meet the conditions. 2500 w. Elect'n, Lond—June 27, 1913. No. 43624 A. Stoping

High Stoping with the Aid of Mine Haulage Machinery (Abbau mit hohem Stoss unter Verwendung von Abbaufördereinrichtungen). Dipl.-Bergingenieur von Bolesta-Malewski. Shows the dangers attending ordinary high stoping, and describes arrangement of using cutting machinery. Ills. Serial. 1st part. 5000 w. Glückauf—Oct. 26, 1912. No. 37417 D. Open Stoping on Wide Lodes (South

Open Stoping on Wide Lodes (South Mine Practice). Andrew Fairweather. Describes the stoping system. Abstract of paper and discussion before the Broken Hill Congress. 3500 w. Aust Min Stand—June 19, 1913. No. 43885 B. Stoping Methods in Michigan Mines. P. B. McDonald Illustrates and described the Mines of the McDonald Illustrates and described the McDonald Illustrates and McDonald Illustrat

Stoping Methods in Michigan Mines. P. B. McDonald. Illustrates and describes new methods aiming to do away with the use of so much timber and to make mining safer. 2500 w. Min & Sci Pr—July 5, 1913. No. 43604.

Underhand Stoping with Square Sets as Practiced in the Broken Hill Proprietary Mine. J. C. Coldham. Describes the latest method put into practice at Broken Hill to meet the requirements for mining broken and badly supported ground. 3000 w. Aust Min Stand—June 19, 1913. No. 43886 B.

Stowing

The Relation Between Subsidence and Packing, with Special Reference to the Hydraulic Stowing of Goaves. George Knox. Abstract of paper read before the Manchester Geol. & Min. Soc. Illustrated discussion of accidents due to subsidence, the difficulties of hydraulic packing, and related subjects. 3500 w. Ir & Coal Trds Rev—Dec. 13, 1912. No. 38534 A.

Surveying

Difficulties in Mine Surveying. H. G. Henderson. Describes methods of overcoming difficulties. Ills. 1200 w. Mines & Min—Feb., 1913. No. 39624 C.

Mine Surveying. E. A. Colburn, Jr. Shows losses due to poor survey work and suggestions for accurate surveys. 1500 w. Min & Sci Pr—Feb. 15, 1913. No. 39966.

The Use of Relief Maps in Mine Surveying. H. G. Henderson. Describes methods of constructing map models. Ills. 2500 w. Sci Am Sup—Feb. 15, 1913. No. 39887.

Switches

Underground Mine Switches. D. W. Jessup. Describes and discusses types of switches employed. Ills. 2200 w. Eng & Min Jour—Nov. 30, 1912. No. 37960.

Taxation

The Taxation of Mines in Various Countries. David Bowen. From a paper read before the Midland Inst. of Min., Civ., & Mech. Engrs. Briefly considers common law taxes, special taxes, local

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taxes and compulsory insurance. 4000 w. Col Guard-Jan. 31, 1913. No. 39794 A. Timbering

Mine Supports in Germany. Illustrates and describes various forms of timber. steel and concrete supports, use of rails, pipe and flat iron. 1800 w. Mines &

pipe and flat iron. 1800 w. Mines & Min—Dec., 1912. No. 38002 C.

Square-Set Timbering: Importance and Evolution. Claude T. Rice. An account of the gradual development of square-set-timbering. Ills. 4000 w. Min & Engng Wld—Dec. 14, 1912. Serial. 1st part. No. 38208.

Timber-Framing Mills for Square-Set Mines. Claude T. Rice. Illustrates and describes the framing mills and framing machines and power requirements. 3000 w. Min & Engng Wld—Feb. 1, 1913. Serial, 1st part. No. 39639.

Timber Framing Mills in the Butte District, Mont. Claude T. Rice. Deals

District, Mont. Claude T. Rice. Deals particularly with the equipment and capacity, especially exemplified by Butte practice, adapted to shaping round timbers. Ills. 2500 w. Min & Engng Wld—Feb. 22, 1913. No. 39986.

Framing Shaft Timber Sets by Machinery. Claude T. Rice. Describes the content used at the West Steward Mine.

system used at the West Steward Mine, Butte, Mont. Ills. 4000 w. Min & Eng-ng Wld—July 12, 1913. No. 43685. Shaft Timbering in Butte Copper Mines. Claude T. Rice. Gives details of

the different framings used. 7000 w. Min & Engng Wld-Oct. 18, 1913. No. 45949.

Safe Timbering. Illustrates and describes examples of systematic placing of timbers. 1500 w. Col Engr-May, 1918. No. 41833 C.

Timber Recovery in Square-Set Mines. Clarence L. Larson. Illustrates and describes methods of recovery, giving costs. 1000 w. Min & Engng Wld—May 24, 1913. No. 42393.

Timbering in the Butte Mines. B. H. Dunshee. A short description of the different kinds of framing that have been used, and what has been decided upon after years of experience. Ills. 2500 w. Bul Am Inst of Min Engrs—Aug., 1913. No. 44749 F.

Tunnels

No. 5 Tunnel, Mammoth Mine, Calif. Robert E. Hanley. Illustrated description of a tunnel driven below existing workings to facilitate ore transportation and to provide drainage. 2500 w. Eng & Min Jour—Dec. 21, 1912. No. 38352. Unwatering

Unwatering two Notable Excavations. Brief account of methods employed in sinking a shaft on the Catskill Aqueduct and in driving tunnels under the East River, New York. Ills. 2000 w. Col Engr—April, 1913. No. 40973 C. Bailing Through an Untimbered Shaft. Douglas Muir. Detailed descrip-

tion of the methods used in unwatering the Rayas mine at Guanajuato, Mex. Ills. 2500 w. Eng & Min Jour-May 17, 1913. No. 42230.

Valuation

Taxation Value of Mineral Rights. Alfred C. Lane. Discusses the value of mineral rights, and how estimated. 2500 w. Eng & Min Jour-Nov. 9, 1912. No. 37867.

Ore Valuation. G. A. Denny. Notes and observations indicating in what circumstances the methods usually employed on the Rand may cause over-valuation 3000 w. S African Mining Jour—Sept.,

1912. (Special.) No. 37842 N. Principles of Mine Valuation. R. Finlay. Considers some of the fundamental factors which determine value. 3500 w. Sch of Mines Qr-Jan., 1913.

No. 40758 D.

Valuation of Iron Mines. James R. Finlay. Discusses the vital factors for any iron-ore field, and how the Lake mines meet the requirements. 5000 w. But Am Inst of Min Engrs—March, 1913. No. 40903 F.

Valuation of Iron-Mines. Discussior of the paper of James R. Finlay. 8500 w. Bul Am Inst of Min Engrs—May,

1913. No. 42466 F.
The Valuation of Mines. T. A. Rickard. Explains the difficulties and the points necessary to ascertain to appraise a mine. 6000 w. Min & Sci Pr—May 24, 1913. No. 42509.

Ventilation

The Ventilation of Rand Mines. Reviews what has been done to improve the

ventilation. Ills. 1200 w. S African
Jour—Sept., 1912. (Special.) No. 37840 N.
Researches on Mine Ventilation by
Means of Air-Pipes (Untersuchungen
über Wetterführung mittels Lutten).
Willy Arlt. Comprehensive series of experiments on various systems. Ills. Serial. 1st part. 4400 w. Zeitschr des Ver deutscher Ing-Sept. 28, 1912. No. 37448 D.

Ventilation Standard and Test at Metal Mines. Frank Reed. Abstract of a paper read before the Australasian Inst of Min Engrs. Reviews the standards of ventilation in operation, investigations, and laws appertaining to mine ventilation.

3000 w. Min & Engng Wld—Feb. 15, 1913. No. 39869.

Ventilation in Metal Mines. Frank C. Loring. Brief discussion of conditions

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Asbestos

and the need of proper ventilation. 1200 w. Jour Can Min Inst—Vol. XV. No. 42061 N.

Mine Ventilation. This first article of a series deals with the quantity of air. mine laws and their requirements.

w. Col Engr—June, 1913. Serial. 1st part. No. 42612 C. Different Types of Ventilation Indi-cators (Die verschiedenen Bauarten von Wetteranzeigern). Dr. Forstmann. An account of the various apparatus in use for the detection of insufficient ventilation in mines. Ills. Serial, 1st part. 6300 w. Glückauf—June 28, 1913. No. 44614 D.

Ventilating Mines and Removing Gas. Dr. J. J. Rutledge. Considers methods of handling air-currents and precautions suggested by experience and observation. 6500 w. Col Engr-Sept., 1913. No. 44850 C.

Tests with Compressed-Air Jet Apparatus and Ventilators in Special Ventilation (Versuche mit Druckluftstrahlapparaten und Ventilatoren zur Sonderbewett-erung). O. Dobbelstein. Tabulated re-sults of tests with jet, electric and turbo-ventilators. Ills. 3500 w. Glückauf— Sept. 27, 1913. No. 46006 D.

See also Air Control, under Mining; Testing Stations, under Coal and Coke, and A. C. Motors, under ELECTRICAL EN-GINEERING, Dynamos and Motors.

See same heading under Industrial ECONOMY.

Winding

"Bayley" Overwind Preventer. States the essentials of an ideal overwinding preventer, and describes the "Bayley" gear, which is entirely unlike any other in main principles. Ills. 1200 w. Col Guard — May 9, 1913 No. 42284 A.

The Bennett Duplex Vertical Overwinding Controller. Drawings and description of this device designed to promote safety of winding operations. 1500 w. Col. Guard-Aug. 29, 1913. No. 45039 A.

Winding Engines
The Braking of High-Speed Winding
Engines. G. K. Chambers. Read before
Deals parthe S. African Inst. of Engrs. Deals particularly with problems of braking of electric winders, but discusses mechanical braking in general. Ills. 5500 w. Col Guard—Jan. 17, 1913. No. 39472 A.

Winding Engine Controllers. James Black. Read before the Scottish Branch of the Nat. Assn. of Col. Mgrs. Discusses debated points in regard to the control, and reports tests made on the Rosehall controller. Discussion. Ills. 2500 w. Ir & Coal Trds Rev-Jan. 17, 1913. No.

Operation of Steam Winding Engines (Manoeuvre des machines d'extraction à P. Drosne. vapeur). A comparative study of double-compound tandem winding engines. Ills. 4500 w. Tech Mod—Jan. 1. 1913. No. 39072 D.

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Alumina

Symposium of Papers on Alumina. Four papers on the production and uses of alumina, by J. W. Richards, S. A. Tucker, A. H. Cowles, and L. E. Saunders. 9800 w. Met & Chem Engng—March, 1913. No. 40331 C.

Aluminum Works
The Vigeland Aluminum Works at Vennesla, Norway (Die Aluminium-Werke Vigeland bei Vennesla in Norwegen). G. Wüthrich. Reviews the Norway aluminum industry, the production of this plant and its water-power development. Ills. Serial, 1st part. 1800 w. Schweiz Bau—Jan. 4, 1913. No. 40026 D.

Extraction and Working of Amber in Palmnicken (Gerrinnung und Verarbeitung von Bernstein in Palmnicken). E. Bellmann. Amber mining on the shores of the Baltic in East Prussia; its appearance in the raw form, and the work of cutting and shaping. Ills. Glückauf-June 14, 1913. No. 43513 D.

Asbestos

Asbestos. J. F. Springer. Illustrated account of its production and industrial applications. 3500 w. Cassier's Mag—Oct., 1912. No. 37153 B.

Asbestos History. W. J. Woolsey. Reviews the chief features in the develop-

ment of the asbestos industry. 1500 w. Can Min Jour—Nov. 1, 1912. No. 37278. The Asbestos Deposit at Soanesville, Pilbara Goldfield. Torrington Blatchford. Abstract from an official report describing deposits in Australia. 1600 w. Min Jour—Nov. 30, 1912. No. 38118 A.

The Asbestos Deposits of the New England States. C. H. Richardson. Considers the Geology, origin, uses, etc. Ills. Discussion. 9500 w. Jour Can Min Inst —Vol. XIV. No. 42022 N.

Breaking of Asbestos-Bearing Edward Torrey. Discusses the The Rock.

Asphalt

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Dolomites

rock-breaking machines used in asbestos milling. Discussion. 3500 w. Jour Can Min Inst-Vol. XIV. No. 42023 N.

The Types and Modes of Occurrence of Asbestos in the United States. J. S. Diller. Description and general information. 4000 w. Jour Can Min Inst—Vol. XIV. No. 42021 N.

Asbestos Mining in Quebec. Reginald E. Hore. Information concerning the deposits, method of mining, production, etc. 700 w. Can Min Jour—Oct. 15, 1913. No. 45992.

Asbestos Mining in Quebec in 1912. Theo C. Denis. Extracts from a recent report. Ills. 1500 w. Can Min Jour-Oct. 1, 1913. No. 45693.

Development of the Asbestos Mining Industry in Quebec. Fritz Cirkel. Reviews the known history of asbestos and its uses, giving information concerning the Quebec deposits. 2500 w. Can Min Jour—Oct. 15, 1913. No. 45993.

Asphalt

Rock Asphalt-Deposits of Oklahoma. L. C. Snider. Map showing location, with description of deposits. Ills. 1700 w. Min & Engng Wld—March 22, 1913. No. 40772.

See same heading, under CIVIL ENGI-NEERING, Materials of Construction.

Mining of Bauxite (Aluminum Ore) Monopolized by the South. W. C. Phalen. Information concerning the production, uses, methods of mining, etc. Ills. 3000 w. Mfrs' Rec—March 27, 1913. (Special.) No. 41561 N.

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Bismuth: Its Properties and the Sources of Supply. T. H. Osborne. Information concerning the localities where it is found, its refining, etc. 2500 w. Engr—April, 1913. No. 41826 C. Chem

Bitumens

Characteristics and Differentiation of Native Bitumens and Their Residuals. Clifford Richardson. A study based on percentages of various constituents and their method of occurrence. 3500 w. Eng Rec-April 26, 1913. No. 41540.

Canada

The Production of Cement, Lime, Clay Products, Stone, and Other Structural Materials in Canada During the Calendar John McLeish. Year 1911. Advance chapter of the annual report on the mineral production of Canada. 16000 w. Can Dept of Mines-No. No. 181. 39538 N.

Clays and Clay Industries of Canada. J. Keele. Reviews what is known of the clay and shale resources of Canada and their uses. Ills. 3000 w. Ap Sci-Dec., 1912. No. 39308 C.

Carbonaceous Deposit

A Remarkable Carbonaceous Deposit Near Putnam, New Mexico. William Foster. Describes the deposit, its occurrence, analysis, solubility, test, etc. 2500 w. Ec-Geol—June, 1913. No. 42950 D.

See same heading, under CIVIL ENGI-NEERING, Materials of Construction.

China Clay

China Clay Production in Devon and Cornwall, England. W. S. Harvey. Information concerning details of this industry. 1200 w. Can Engr—Nov. 21, 1912. No. 37776.

Clay Products and Clays of the South. Jefferson Middleton. The outlook for the industry, with a résumé by states of the

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The Function of Time in the Vitrifica-tion of Clays. G. H. Brown and G. A. Murray. Describes investigations and discusses results. Ills. 4000 w. U S Bureau of Stand, No. 17—May 20, 1913.

No. 45548 N.

Effect of Over Firing Upon the Structure of Clays. A. V. Bleininger and E. T. Montgomery. Describes experimental work, discussing results. 3000 w. U S Bureau of Stand, No. 22—May 15, 1913. No. 45549 N

Technical Control of the Colloidal Matter of Clays. H. E. Ashley. A report of investigations and a study of applications. Ills. 115 pp. U S Bureau of Stand, No. 23—Nov., 1911. No. 45550 N.

Corundum

An Assay for Corundum by Mechanical Analysis. W. Spencer Hutchinson. Describes briefly a method used to determine the corundum contents of samples of hard crystalline gneiss containing both corundum and red garnet. 700 w. Bul Am Inst of Min Engrs-June, 1913. No. 43255 F.

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The Character and Possible Origin of

Electrometallurgy

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Natural Gas

the Green Dolomites of New Ontario. N. B. Davis. Report of investigations made by the writer. Ills. 2500 w. Jour Can Min Inst—Vol. XIV. No. 42036 N.

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The Electrodeposition of Tin. Edward F. Kern. Read before the Am. Electro-Chem. Soc. A compilation of data collected from available sources. 9000 w. Chem Engr-June, 1913. No. 43164 C.

Feldspar

Mining and Treatment of Feldspar and Kaolin in the Southern Appalachian Region. A. S. Watts. Report of investiga-tions showing the United States will be able to supply all of the Kaolin required for domestic consumption, and of quality excelled by none. Ills. 164 pp. U S Bureau of Mines Bul 53. No. 45160 N.

Fire-Clay

Fire-Clay Deposits of Canada. Hein-rich Ries. Describes deposits in Nova Scotia, Saskatchewan, and British Columbia. Ills. 3000 w. Bul Am Inst of Min Engrs—March, 1913. No. 40897 F.

Garnet

Notes on Garnet Zones on the Contact of Intrusive Rocks and Limestones. F. Kemp. A study of contact zones, especially discussing garnet. 4500 w. Jour Can Min Inst — Vol. XV. No. 42041 N.

Gas Fields

Kansas and Oklahoma Gas Fields. Lucius L. Wittich. Explains conditions affecting the gas supply, and describes compressor plants for transporting gas in pipes. Ills. 3000 w. Mines & Min— Feb., 1913. No. 39627 C.

Geology

Is the Siebenbürgen District to Be Considered as a Natural Gas Field in Conjunction with Potash and Petroleum (Ist in Siebenbürgen neben den Erdgasmit Kali- und Petroleumfunden zu rechnen)? Dr. Herbing. A study of the peculiar geological formation of this region in Austria, as determined from gas well borings. Ills. 4900 w. Glückauf— March 15, 1913. No. 41416 D.

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Gives the history, origin, etc. 5000 w. Ec-Geol-Dec., 1913. No. 39343 D.

The Graphite Industry of Pennsyl-Benjamin L. Miller. Describes the geology and mining methods, concentration, uses, etc. Ills. 2500 w. I Engng Wld — March 29, 1913. Min & No. 40970.

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Artificial Stone from Gyrqum marks on the value of gypsum and the

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On the Occurrence of Manganese at New Ross in Nova Scotia. H. E. Kramm. Describes the deposits, discussing the origin of the ore. Ills. 2000 w. Jour Can Min Inst—Vol. XV. No. 42043 N. Determination of Manganese as Sulphate and by the Sodium Bismuthate Method. William Blum. Explains the importance of accurate manganese de-

importance of accurate manganese determinations, outlines the bismuthate method and its history, explaining the work and results. 7000 w. Bul Bureau of Stand—March 1, 1913. No. 42930 N.

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The Marble Industry of Carrara, Italy. Juan Blanquier. Describes the geology of the Apuan Alps, the winning of the marble, its conveyance, and related matters of interest. 2000 w. Min Jour—Sept. 13, 1913. No. 45291 A.

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Natural Gas, with Incidental Reference to Other Bitumens. I. N. Knapp. Illustrated historical sketch of bitumen and its surface indications, the origin, geology, classification of oil and gas accumu-

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lations, etc. Nov., 1912. 5000 w. Jour Fr Inst-Nov., Serial. 1st part. No. 37540 D.

Measurement of Natural Gas. Thomas R. Weymouth. Describes methods, giving the proper formulae to be used with them. 3000 w. Jour Am Soc of Mech Engrs-Nov., 1912. No. 37877 D.

Natural Gas in Oklahoma. Charles N. Gould. A discussion of the location and quantity of natural gas in this field. 4500 w. Mfrs' Rec—Jan. 2, 1913. No. 38776.

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Manufacture of Gasoline from Natural Gas. Charles T. Hutchinson. Descriptive account of this industry, discussing its possibilities in the California oilfields. 3000 w. W Engng — May, 1913. 42270 C.

Outline of the Geology of Natural Gas in the United States. Frederick G. Clapp. The distribution, production, description of individual fields, geology and origin are considered. Maps. 6000 w. Ec-Geol—Sept., 1913. No. 45824 D.

See also Gasoline, under MECHANICAL Engineering, Combustion Motors.

Nickel

The Nickel Industry: With Special Reference to the Sudbury Region, Ontario. A. P. Coleman. A monograph describing all the known nickel ore deposits in Ontario, methods of mining and smelting the ores, and an account of the chief nickel regions of other countries. Maps & Ills. 206 pp. Can Dept of Mines—No. 170. No. 44490 N.

Canada's Nickel Industry. Alexander Gray. From Jour. of Commerce. A review of the history of the development. 3500 w. Can Min Jour—Oct. 1, 1913. Serial, 1st part. No. 45694.

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Second Annual Report of the Director of the Bureau of Mines to the Secretary of the Interior for the Fiscal Year Ending June 30, 1912. Explains the purpose of the Bureau of Mines (U. S.), describing its work, its needs, investigations, administration, etc. 88 pp. U S Bureau of Mines—Jan., 1913. No. 40413 N.

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Progress in Colorado Mining and Milling. W. H. Graves. Considers the improved mining methods and economy, better mill extraction and other features of progress. Ills. 1200 w. Min & Engng Wld—March 29, 1913. Serial. 1st part. No. 40969.

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Leasing and Low-Grade Milling at Cripple Creek. Stephen L. Goodale. An account of present conditions and the success of the leasing system and the means of treating low-grade ores. Ills. 2500 w. Min & Sci Pr.—Aug. 23, 1913.

No. 44801. Crystallography

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Fritz, John
Biographical Notice of John Fritz.
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Development of Mines and Quarries of Georgia. S. W. McCallie. Illustrates and describes some of the important minerals of the state which have been more or less developed. 2500 w. Mfrs' Rec-Dec. 12, 1912. No. 38157.

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The Admiral Mining Plant at Hörde (Die Bergwerksanlage Admiral bei Hörde). Herr Baum. Detailed description of mining operations. Ills. 5600 w. Glückauf—Nov. 30. 1912. No. 38422 D.

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A Visit to the State Mines in Limburg (Inleiding tot het bezoek aan de Staatsmijnen in Limburg). R. de Kat. General description of the district, with plans of workings, shaft-houses, dwellings, etc. Ills. 5400 w. De Ingenieur—July 26, 1913. No. 44696 D.

Hot Springs
The Hot Springs and the Mineral Deposits of Wagon Wheel Gap, Colorado.
W. H. Emmons and E. S. Larsen. Notes based on a hasty visit to the springs, describing the springs and their associated universal deposits. Ills. 4000 w. Ec-Geol—April-May, 1913. No. 42323 D.

Mining Operations in Idaho During 1912. Robert N. Bell. Information from the annual report. Ills. 1800 w. Min & Engng Wld — March 8, 1912. No. 40381.

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The Protection of Investors in Mining Stocks. W. H. Storms. Thinks drastic legislation is needed to protect the public from the wiles of promoters. 1500 w. Pro Am Min Cong—1912. No. 46178 N.

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A Trip Through Northern Korea. Henry W. Turner. Gives notes taken in the autumn of 1910. Information concerning the geology of the region traversed. Ills. 3000 w. Bul Am Inst of Min Engrs-April, 1913. No. 41658 F.

Work of the Seoul Mining Company, Korea. Information from a recent report concerning the mines, ores, power requirements, and milling results. Map. 2000 w. Min & Sci Pr—June 7, 1913. No. 42801.

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Living Conditions on the Lake Superior Ranges. Illustrated account of how the Iron Mining Co.'s establish towns, .provide homes and generally care for the welfare of their employes. 1200 w. Ir Trd Rev—Jan. 23, 1913. No. 39317.

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Land Classification: Its Basis and Methods. W. B. Heroy. Discusses the classification of public lands with relation to water supply, domestic use, irrigability, water power value, etc. 8000 w. Ec-Geol-June, 1913. No. 42949 D.

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London

A Year in the London Mining Market. T. A. Rickard. A review of the Transvaal, Rhodesia, West Africa, Australasia, America, India, Russia, and other countries. Maps. 5500 w. Min & Sci Pr-(Special.) Jan. 4, 1918. No. 38922 C.

Madagascar Some of the Mineral Products of Madagascar (Notice sur quelques produits miniers de Madagascar). F. Bonnefond. A brief account of some ores found. Maps. 2800 w. Mem Soc Ing Civ de France—Jan., 1913. No. 42169 G.

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Mining in the Federated Malay States. D. C. Alexander, Jr. Report, with special reference to methods and equipment. Ills. 25 pp. U. S. Bureau of Mfrs—No. 59. No. 41717 N.

· Manitoba Manitoba's Minerals. R. C. Wallace. Brief discussion of the resources known and the advisability of initiating a policy of development. 1500 w. Can Engr-Feb. 13, 1913. No. 39825.

Manitoba's Minerals. Dr. R. C. Wallace. Reviews what is known of the mineral resources. Gypsum, clay products, granite, limestones and gold have been found. 1400 w. Archt, Lond—Oct. 3, 1913. No. 45832 A.

Metallurgy

Present Limitations of Metallurgical Processes. F. W. Traphagen. Abstract of a paper read before the "Tecknick" Club, Denver, Colo. Calls attention to improvements needed in metallurgical practice 1500 w. Min & Engng Wld— Feb. 1, 1913. No. 39640. Metal Production

Production and Consumption of the Heavy Metals (Erzeugung und Verbrauch der wichtigsten Metalle). Statistics on the production and use of lead, copper, zinc and tin in Europe and America within the past three years. 7000 w. Glückauf—Sept. 13, 1913. No. 45389 D.

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Mineral Resources of San Luis Potosi, Mex. Wilbert L. Bonney. Silver is the chief product, but gold, lead, copper, antimony, salt, sulphur, quicksilver, and zinc are produced. Tin and iron de-posits have been located. 2000 w. Min & Engng Wld — April 12, 1913. No. 41201.

Properties of Mines Company of America. Charles Biesel. Information from the annual report of mines in northern Mexico. Map. 5000 w. Min & Sci Pr— June 14, 1913. No. 42937.

The Mines of Mexico. Herbert A. Megraw. A discussion of present condi-

tions and the future outlook. Ills. 2500 Engineering Magazine-Oct., 1913. No. 45541 B.

A New Occurrence of Silver, Copper, and Cobalt Minerals in Mexico, Frank R. Van Horn. Describes minerals found at Veta Rica mine, Coahuila, Mexico. Ills. 2500 w. Am Jour of Sci—Jan., 2500 w. Am No. 39435 D. 1913.

Progress in Mexico in 1912. A review of the year's production and developments in mining. Map. 3500 w. Min & Sci Pr—Jan. 11, 1913. No. 39180.

A Scheme for Utilizing the Polarizing Microscope in the Determination of Minerals of Non-Metallic Lustre. A. J. Moses. Describes tests used and gives tables. 6000 w. Sch of Mines Qr.—July, bles. 1913. No. 43735 D.

Mineral Lands

The Federal Government and Mineral Lands. W. C. Mendenhall. Excerpts from a paper read before the Calif. Miners' Assn. Discusses the subject of public land administration. 4500 w. Min & Engng Wld—Dec. 21, 1912. No. 38355. Mineralogy

The Paragenesis of Minerals. Austin F. Rogers. Discusses the different senses in which the term paragenesis is used, paragenetic varieties, etc. 3000 w. Ec-Geol—Oct.-Nov., 1912. No. 38501 D.

Transformations and Chemical Reactions in Their Application to Temperature Measurements of Geological Occurrences. Joh. Koenigsberger. A study of geological temperature determinations. Ills. 11500 w. Ec-Geol—Oct.-Nov., 1912. No. 38504 D.

Mining Congress

Report of the Proceedings of the Fifteenth Annual Session of the American Mining Congress. Reports of meeting at Spokane, Washington, Nov. 25-29, 1912. 124 pp. Pro Am Min Cong—1912. No. 124 pp. 46175 N.

Mining Industry
The President's Annual Address. Samuel A. Taylor. Discusses some of the problems and conditions which exist in the mining industry, and the solution for some of them. 4000 w. Pro Am Min Cong—Nov. 25-29, 1912. No. 44059 N. Mining Stocks

The Protection of Investors in Mining Stocks. W. H. Storms. Shows the need of more drastic legislation. 1500 w. Pro Am Min Cong-Nov. 25-29, 1912. No. 44061 N.

Natural Resources

The Disposition of Natural Resources. George Otis Smith. Considers needed reforms in legislation affecting the disposi-

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tion of public lands. 2500 w. Bul Am Inst of Min Engrs-Oct., 1913. 46348 F.

The National Forests and Development of Natural Resources. Henry S. Graves. Considers that their control should be the care of the nation and not of States or private individuals. 4000 w. Pro Am Min Cong—1912. No. 46177 N.

Nevada

The Kennedy Mining District, Nevada. Paul Klopstock. Gives the history, geology, character and value of ores, ore treatment, etc. 2500 w. Bul Am Inst of Min Engrs—June, 1913. No. 43256 F.

New Mexico

The Geologic and Structural Relations at Santa Rita (Chino), New Mexico. Sidney Paige. Describes the important features of the region and gives a table showing the relation of ore formation. Map. 4000 w. Ec-Geol—Sept., 1912. No. 37671 D. New York

Mining in Northern New York. P. B. McDonald. An illustrated account of the mines, the variety of minerals, the geology, economic conditions, etc. 2500 w. Eng & Min Jour — April 5, 1913. No. **4**1110.

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Ore Deposits of the Philippine Islands. F. T. Eddingfield. Discusses the geology, mineral springs, gold ore veins, placers, etc. Ills. 6000 w. Philippine Jour of Sci—April, 1913. No. 44055 N.

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The Economic Progress of Metals Other Than Iron in 1910 (Mouvement économique des Métaux autres que le Fer en 1910). M. Rebeyrol. Gives production statistics and prices on copper, lead, zinc, tin, nickel, aluminum, and antimony. Diagrams. 10500 w. Rev de Metall-Oct.. 1912. No. 87500 H.

South Dakota

World's Production of Principal Metals. Investigates the rate of increase in the production of copper, iron, lead and zinc for the last forty years. 1000 w. Eng & Min Jour—April 12, 1913. No. 41188. Mining in Foreign Countries in 1912.

General Review of the different countries, indicating satisfactory conditions in all countries but Mexico. 50000 w. Min & Engng Rev—Jan. 25, 1913. No. 89422.

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Queensland Mining Industry. Report of the under secretary for mines, reviewing the year 1912. 21800 w. Queens Gov Min Jour-March 15, 1913. No. 41609 B.

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The Mineral Production of the Lower Rhine-Westphalian Districts in 1912 (Die Bergwerksproduktion des nieder-rheinisch-westfälischen Bergbaubezirks im Jahre 1912). Ernest Jüngst. Ton-nage production and revenues by districts compared with previous year. 8000 Glückauf — April 26, 1913. 42120 D.

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The Determination of the Relative Volumes of the Components of Rocks by Mensuration Methods. Francis Church Lincoln and Henry Lewis Rietz. Briefly outlines and compares all methods employed and describes in detail the mensuration methods. 5000 w. Ec-Geol — March, 1913. No. 41279 D.

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Russia in 1912. E. de Hautpick. Reviews the mining industry, the production and progress in gold mining, copper, manganese, iron, coal, and petroleum. 8000 w. Min Jour—Jan. 4, 1913. No. 39148 A.

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Mining and Milling in the Black Hills. S. D. Jesse Simmons. The district is

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The Mineral Assets of the South. Dr. David T. Day. Information concerning their value, and extent. Ills. 3500 w. Mfrs' Rec—March 27, 1913. (Special.) No. 41550 N.

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The Falding Sulphuric Acid Chamber. Explains the theory of the Falding system, illustrating plants. 1000 w. Eng & Min Jour—Feb. 8, 1913. No. 39738.

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Mining Possibilities in Turkestan. Algernon Noble. Information concerning coal, oil and copper mining in this Asiatic region. Map and Ills. 1700 w. Mining Mag—Dec., 1912. No. 38635 B.

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Mining in the United States in 1912. The mining activities of the different states are reviewed by well informed writers, and show unusual prosperity and progress. 114000 w. Min & Engng Rev—Jan. 25, 1913. No. 39421.

The Geographical Distribution of Mining Development in the United States. Edward W. Parker. Information concerning the mineral products and their distribution. 2200 w. Bul Am Inst of Min Engrs—March. 1913. No. 40898 F.

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Wood. Ilustrated study of some recent railroad accidents. 2200 w. Sci Am—Jan. 25, 1913. No. 39332. Railroad Accidents, Their Causes and Remedy. D. F. Jurgenson. Abstract of a Report to the Nat. Assn. of Ry. Com. Discusses the importance of the human element in train operation, and the steps that should be taken. 2000 w. Ry Age Gaz—Jan. 3, 1913. No. 38791. Railroad Accidents: Their Causes and Remedy. D. F. Jurgensen. Considers preventable and non-preventable accidents, their causes, suggested remedies,	The Automatic Stop. B. C. Rowell. Discusses arguments opposing its use, showing them to be based on false assumptions. 1800 w. Ry & Engng Rev—Feb. 8, 1913. No. 39755. British Opinion on Railway Automatic Stops. H. Raynar Wilson. Illustrated review of the locomotive cab-signals in use in England and explanation of why their use has not been extended. 2500 w. Eng News—Jan. 30, 1913. No. 39590. The Automatic Train Stop Problem. A. H. Rudd. Explains the difficulties encountered in adapting automatic stops to
laws affecting railway operation, etc. 6500 w. Jour Assn of Engng Socs—March, 1913. No. 40432 C. A Comparison of Railway Casualties in Great Britain and in the United States. Editorial. 1800 w. Eng News—Oct. 2, 1913. No. 45654. The Aisgill Accident. Gives the statement made by Sir Guy Granet as to the action of the Midland Ry. Co. in meeting the suggestions of the Board of Trade inspectors. Also editorial. 3500 w. Engr, Lond—Sept. 19, 1913. No. 45573 A. Report on North Haven Collision. Details from the report of the Interstate	miscellaneous railroad service. 2500 w. Ry Age Gaz—June 6, 1913. No. 42676. A Successful Automatic Train-Stop. Illustrated description of a device which stops the train and reports disregard of signals. 1500 w. Sci Am—Jan. 18, 1913. No. 39129. Braking Break-in-Two of Trains. Portion of a paper by F. B. Farmer discussing this problem, the cause, etc. 1800 w. Ry & Loc Engng—July, 1913. No. 48403 C. Collisions Six Passengers Killed at Stamford. Detailed account of the accident, with editations.
Commerce Commission on the rear collision of passenger trains occurring Sept. 2. 4000 w. Ry Age Gaz—Oct. 3, 1913. No. 45664. See also Collisions, under Conducting Transportation.	torial comment. 3500 w. Ry Age Gaz—June 20, 1913. No. 42998. Report on Stamford Collision. Reviews the report of the Interstate Commerce Commission on this rear collision of passenger trains which occurred June

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12, 1913. Also editorial. 4000 w. Ry Age Ga2—July 18, 1913. No. 43798. The Latest and Worst New Haven Rail-

way Disaster. Editorial criticism of the N. Y., N. H. & H. R. R. in relation to the rear collision of Sept. 2. Ills. 2500 w. Eng News—Sept. 11, 1913. No. 45075. The North Haven Collision. Gives de-

tails of the causes of this wreck and statements as to preventive measures adopted. Also editorial. 9800 w. Ry Age Gaz-

Sept. 12, 1913. No. 45079. New Haven Officers' Salutatory. document signed by the new president and vice-president. 1500 w. Ry Age Gaz-Sept. 26, 1913. No. 45446.

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Control

Train Control. First of a series of articles describing the objects of train control and means of carrying it into practice. 8500 w. Engr, Lond—July 11, 1913. Serial, 1st part. No. 43904 A. Derailment

Cause of the Glen Loch Derailment. Illustrated account of a remarkable failure of a latticed bridge column from an obscure cause, and possibly an obstruction on the track. 2500 w. Ry Age Gaz— Dec. 13, 1912. No. 88185.

Commissioner McChord on Westport Derailment. From the report of the Interstate Commerce Commission. Demands long crossovers for all high-speed trains, and calls railways to account for neglecting automatic-stop. 3000 w. Gaz—Dec. 13, 1912. No. 38188. Ry Age

Locomotive Tender Derailments. More contributions to the controversy which started last Sept., in a communication from E. W. Summers. A suggestion as to the Westport wreck. 3500 w. Ry Age Gaz-Jan. 31, 1913. No. 39599.

Engine Derailments. Gives diagrams illustrating the derailments of all classes of tender and tank engines, with explan-atory notes. 800 w. Engr, Lond—April atory notes. 800 w. 4, 1913. No. 41246 A.

Derailment of Trucks on Curves. Arnold Stucki. A study of the action of the different wheels of a car in entering upon, passing over and leaving the curve. 1500 Ry Age Gaz-Jan. 17, 1913. No. 39205.

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Despatching

I. Diagrams Showing Train Movements at Stations. Mr. Kühl. II. Diagrams for Facilitating the Study of the Full Utilization of Tracks at Passenger Stations. A. Plate. III. Note on the Diagrams by Mr. Kühl and by Mr. Plate for Facilitating the Study of the Full Utilization of Platform Tracks at Passenger Stations. L. Weissenbruch and J. Verdayen. Related papers. 4000 w. Bul Int Ry Cong

Nov., 1912. No. 87707 G.

"Contingent Schedules" on the Virgin-

ian Railway. A scheme for simplifying the work of the train despatcher and diminishing the flagman's duty. 8500 w. Ry Age Gaz-Nov. 1, 1912. No. 87248. Efficiency

See same heading, under INDUSTRIAL ECONOMY.

European Practice

Impressions of European Railway Practice. Henry W. Jacobs. Considers the superiority of European mechanical methods to be the result of training of employees and careful selection and design of material. 3000 w. Ry Age Gaz— March 21, 1913. No. 40746.

Facilities

The Country's Need of Greater Railroad Facilities. James J. Hill. Discusses the increase of business and the congested terminals on the railways of the United States. 5000 w. Ry Age Gaz—Dec. 20, 1912. No. 38344.

Flagging The Flagging Rule and Its Enforcement. Explains some of the conditions and the complexity of problems. 3000 w. Ry Age Gaz-Oct. 17, 1913. No. 45916. Freight Trains

Starting, Running and Stopping Long Freight Trains. F. B. Farmer. Extracts from a paper read at the convention of the Air Brake Assn. in St. Louis, May 7, 1913. 4500 w. Ry & Engng Rev
—May 10, 1913. No. 41980.

Interlocking

The Interlocking of Railway Points and Signals. Reviews briefly the modern principles of railway signaling, especially the work of John Saxby. Ills. 2500 w. Engr, Lond—Aug. 15, 1918. No. 44729 A.

Note on the Installations of Saxby Interlocking Apparatus on the Belgian State Railways. René Minet. with the rules which determine the arrangements, the methods of testing, and methods of maintenance. Ills. 30500 w. Bul Int Ry Cong-Aug., 1913. 44703 G.

Rules Governing the Construction, Maintenance and Operation of Interlocking Plants. Gives rules submitted and adopted by the Wisconsin Commission, to become effective Dec. 1, 1913. 2500 w. Engng & Con—Oct. 29, 1913. No. 46385.

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Studies of Operation—The B., R. & P. William E. Hooper. A study of the policy

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Signaling

of an independent road. 4000 w. Ry Age Gaz—March 21, 1913. No. 40743.

Studies in Operation—The M. K. & T. Shows a substantial reduction was made in the transportation ratio of the Texas lines without the addition of heavier power. Map. 4500 w. Ry Age Gaz—May 30, 1913. No. 42634.

Studies of Operation—the C. B. & Q. A study of economical operation, showing that a growth in freight traffic from 1901 to 1912 of 98.3 per cent. was handled with a decrease of 9.8 per cent. in train miles. 3000 w. Ry Age Gaz—July 18, 1913. No. 43796.

Train Operation Sixty Years Ago. Comparison between the modern methods of train management and the ideas of 1852. 3000 w. Ry Age Gaz—Aug. 22, 1913. No. 44540.

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The Administration of the State Railways of Prussia-Hesse. William J. Cunningham. Describes the physical and traffic characteristics and comments on the service and operating features. 25000 w. Pro N Y R R Club—April 18, 1913. No. 42326.

Railophone

New English Wireless Railophone. Describes the railophone wireless inductive system of railway telephony, telegraphy and signalling as developed at Birmingham, England. Ills. 1500 w. Ry Engng & Main of Way—June, 1913. No. 42977.

Refrigeration
Organization for Handling Refrigeration Transportation. J. S. Leeds. Read before the Third Int. Cong. of Refrig. Explains requirements for handling perishable commodities. 3000 w. Ry & Engng Rev—Oct. 4, 1913. No. 45684.

Safata

Contributions to the Safety Contest. Methods of reducing accidents in the maintenance of way departments are described by various contestants. Ills. 5500 w. Ry Age Gaz—Nov 15, 1912. No. 37603.

The "Safety First" Movement. Mr. Bradshaw. Introductory remarks, with an account of what is being done on the New York Central R. R. Discussion. Ills. 14500 w. Pro W Ry Club. Feb. 18, 1913. No. 40862 C.

Safety on the Chicago & North Western. W. T. Gale. Prize article. An outline of organization for this work and illustrations of shop safeguards. Ills. 1200 w. Am Engr—March, 1913. No. 40343 C.

Safety on Railroads. J. W. Coon. Explains the work of safety committees, and discusses the problems to be solved

in safeguarding employees of railroads. Discussion. 18500 w. Pro N Y R R Club—Feb. 21, 1913. No. 40849.

See also Accidents, under Conducting

Transportation.

Safety Work
Greater Efficiency in Safety Work.
George Bradshaw. A discussion of matters relating to the safety first movement.
2000 w. Ry Age Gaz—April 18, 1913. No.
41347.

Schedules

Another Contingent Schedule Scheme. Explains a "safety" plan devised by G. W. Turner. Also a letter presenting arguments in its favor. 3000 w. Ry Age Gaz—Dec. 13, 1912. No. 38184. Signaling

Signal System of the Panama R. R. Describes the new scheme of signalling adopted. 2200 w. Ry & Engng Rev—

Nov. 30, 1912. No. 37957.

Mileage of Railroads Block Signaled. Gives report showing extensive new mileage of automatic block signals. 2000 w. Ry Age Gaz—Dec. 27, 1912. No. 38631.

Report of Block Signal and Train Control Board. Information from the final report. 3000 w. Ry Age Gaz—Feb. 19, 1913. No. 39853.

Automatic Block Signals on the Atlantic Coast Line R. R. B. W. Meisel. Illustrated description of the track and signal layout, the circuit plans, etc. 1200 w. Ry Engng & Main of Way—March, 1913. No. 40793.

Signaling Systems on the Métropolitain and Nord-Sud Railways of Paris (Les systèmes de signalisation du Métropolitain et du Chemin de fer Nord-Sud de Paris). J. Quinat. Detailed operating methods of both railways. Ills. 5600 w. Genie Civil — March 15, 1913. No. 40601 D.

Final Report of the Block Signal and Train Control Board to the Interstate Commerce Commission. Ills. 54 pp. Interstate Com. Com.—June 29, 1912. No. 41713 N.

Signal Engineering as a Field for Engineering Graduates. M. H. Hovey. An outline of the development of railway signaling. 2000 w. Wis Engr—Feb., 1913. No. 41264 C.

Automatic Stops and Audible Signals. A summary of recent information concerning automatic stops and their use on various roads. 2500 w. Ry Age Gaz—April 11, 1913. No. 41172.

Pennsylvania Terminal Signals and Interlocking. Illustrated description of the protective systems installed at the sta-

Train Control

tion in New York, and in the tunnels and in the approaches leading thereto. 6800 w. Ry Gaz, Lond—March 28, 1913. No. 41135.

Automatic Block Signal Records. Records of American practice and performance. Also editorial. 3300 w. Ry Age Gaz—June 13, 1913. No. 42819.

Railway Power Signalling. A brief description of the various systems in operation. 3000 w. Mech Wld—May 23, 1913. No. 43138 A.

Signal Department on Railroads. H. Mann. Considers some of the difficulties that have been met, and the value of signals. General discussion. 11500 Pro Cent Ry Club-May 9, 1913. No. 42799 C

Electric Interlocking at Aliquippa, Pa. B. W. Meisel. Illustrated description of an all-electric installation on the Pittsburg & Lake Erie R. R. 2500 w. Ry Engng & Main of Way-July, 1913. No. 43771.

Railway Signaling. A. H. Rudd. An account of the signals on the Pennsylvania R. R., the method of giving information to enginemen and means of securing accuracy, with a summary of the automatic stop situation. Discussion. 8500 w. Pro Ry Club of Pittsburgh-May 23. 1913. No. 44325 C.

An Unusual Signal Installation. Brief description of the switches and temporary automatic block signals installed for the celebration at Gettysburg. 500 w. Ry Age Gaz—Aug. 8, 1913. No. 44257.
The Possibilities of Flash Signalling in

British Railway Practice. J. F. Gairns. Considers their limitations. 3000 w. Bul Int Ry Cong—Jan., 1918. No. 89554 G.
Flashlight Signals on the Swedish State Railways. Drawings and explanation of a system that has given satisfaction during a year's service. 1000 w. Lond—Jan. 10, 1913. No. 39274 A.

Block Signals and Interlocking Plants on the Chicago Great Western R. R. Illustrated detailed description.

Eng News—Jan. 16, 1913. No. 39197.

Automatic Block Signals for Single Track; C., I. & L. Ry. From a paper by E. G. Strodling, read before the Indiana Engng Soc. Illustrated description of an extensive installation. 1500 w. Eng News—Jan. 9, 1913. No. 38947. Washington Water Power Co.'s Block

Signals. Frank C. Perkins. Describes an installation on high speed electric lines in the State of Washington. 1800 w. Ry Engng & Main of Way—Jan., 1918. No. 39279.

See also same heading, under STREET . AND ELECTRIC RAILWAYS.

Speed

Calculating the Traveling Time and Speed of Railway Trains from the Load Limit of Locomotives (Die Berechnung der Fahrzeiten und Geschwindigkeiten von Eisenbahnzügen aus den Belastungsgrenzen der Lokomotiven). Herr Strahl. Formulae and the derivation of a chart for rapid determinations. Ills. Serial, 1st part. 3000 w. Glaser's Ann—Sept. 1, 1913. No. 46013 D.

Summer Services

The Summer Train Services. Reviews the changes made in train service for Great Britain. 2500 w.. Engr, Lond— July 4, 1913. No. 43723 A. July 4, 1913.

Telephone Despatching
Use of Telephones on the Pennsylvania
Railroad. J. C. Johnson. Abstract of a
paper read before the Association of Ry.
Telegraph Supt. Information concerning the extensive use of the telephone for despatching, discussing its objections and benefits. 1800 w. Ry Age Gaz—May 30, 1913. No. 42686. Ticket Printing

Booking-Office Ticket-Printing Ma-chines. H. Diehl. Describes recent de-

velopments in the printing of railway tickets, showing how much work and time are required from the printing of the tickets until they are in the hands of the passengers. 3900 w. Bul Int Ry Cong —July, 1913. No. 43983 G. Ticket Selling

Conducting a Union Ticket Office. B. W. Frauenthal. Outline of the organization and methods used at St. Louis, Mo. 3300 w. Ry Age Gaz-Nov. 8, 1912. No. 37333.

The Rundreise Union. An account of its operations on the Continent and its system of issuing and selling tickets. 3000 w. Ry Gaz, Lond-Nov. 15, 1912. No.

37812 A. Train Control

The Thury Multiple-Unit Train Control System as Applied to the Martigny and Chatelard Railway. Illustrated description of the apparatus and its working. 3000 w: Tram & Ry Wld—Aug. 14, 1913. No. 44796 B.

Automatic Wireless Train Control. Diagrams and description of the Prentice system. 1000 w. Engr, Lond—Aug. 29, 1913. No. 45046 A.

The Automatic Control of Trains. L. V. Lewis. Explains the problem of automatic train control and reviews the devices brought into use, discussing features of the automatic stop. 3500 w. Elec Jour

Oct., 1913. No. 46324.
The Detroit Automatic Train Control.
Illustrates and describes the principal

Train Crews

MOTIVE POWER AND EQUIPMENT

Air Brakes

features. 1500 w. Ry Gaz, Lond—Sept. 26, 1913. No. 45732 A.

Handling Modern Trains from the Air Brake Standpoint. Robert Burgess. Considers conditions the air brake must meet in handling freight and passenger trains. Discussion. 6500 w. Pro S & S-W Ry Club—July 17, 1913. No. 46101 C.

Train Control System of the L. and Y. Railway. Illustrated description of the graphic system used for controlling from central offices all the goods and mineral 800 w. Engr, Lond-Oct. 10, 1913. No. 45988 A.

Train Control on the North British Railway. Explains the control system and its object. Ills. 2000 w. Ry Gaz, Lond—Oct. 3, 1913. No. 45845 A.

Train Crews

The Arguments for and Against Train-Crew Legislation. Gives the history and present status of train operation, the provisions of the measures enacted and proposed, and a discussion of the effect of such legislation. 36 pp. Bureau of Ry Ec—Bul 53. No. 46118 N.

Train Service

German Express Trains. An account of recent changes and improvements introduced which make German non-stop runs rank next to Great Britain. 2200 w. Engr, Lond-Dec. 20, 1912. No. 38898 A.

Some Continental Train Improvements. An account of important new express services between England, France and Italy, to be put in force on the opening of the Lötschberg tunnel. 1200 w. Engr, Lond—June 13, 1913. No. 43149 A.

Train Stop

A Safety Automatic Train Stop. Illustrates and describes details of an automatic train stop system which has been under test for a year on the Pennsylvainia railroad. 1500 w. Sci Am—May 3, 1913. No. 41781.

Transport

The Economic Considerations Which Determine the Cost of Transport. Trans. from C. Colson's "Transports et Tarifs." Considers the principles affecting transportation costs, the value of the service, and elements that determine value. 2500 w. Ry Gaz, Lond-March 28, 1913. No. 41134 A.

Transportation

Transportation and Business. W. W. Finley. Short papers introducing a general discussion. 8000 w. Pro St Louis Ry Club—Jan 10, 1913. No 39941.

Some Aspects of the Subject of Transportation. J. E. Kuhn. Shows the rapid increase in population in the United States, the traffic demands, and discusses the railroads, motor vehicles, water transportation, ocean transportation, and related matters. 9500 w. Pro Engrs' Club of Phila—July, 1913. No. 44336 D.

MOTIVE POWER AND EQUIPMENT

Accumulator Traction

Storage Battery Cars on Steam Railways. Illustrated description of an electric storage battery car for use on the Tanana Ry. of Alaska, and a large car used by the Chicago Great Western. 1000 w. Ry Mas Mech—May, 1918. No.

Modern Accumulator Cars (Moderne Akkumulatoren-Fahrzeuge). H. Beckmann. Describes late types of batteries and their application to the driving of crane and mine locomotives, street cars, and boats. Ills. Serial. 1st part. 2200 Elek u Masch-April 20, 1913. No. 42161 D.

Aerial Tramways

See same heading, under MECHANICAL ENGINEERING, Transporting and Convey-

Air Brakes

Excess Pressure Governor Top. torial discussion of brake pipe pressure and leakage, and the automatic regulation. 2000 w. Ry & Loc Engng—Nov., 1912. No. 37242 C. The Electro-Pneumatic Brake System for Steam Road Service. Walter V. Turner and P. H. Donovan. Illustrated detailed description of an air-brake equipment for steam road cars and its operation. 7800 w. Jour Fr Inst-Nov., 1912. No. 37541 D.

Making the New York Air Brake. Fred Illustrates and describes Colvin. methods used in making the cylinders and piston rings in a water-power shop at Watertown, N. Y. 1500 w. Am Mach -Nov. 21, 1912. Serial. 1st part. No.

Operation of L. T. Brake. Recommendations for the New York L. T. brake equipment. 1500 w. Ry & Loc Engag—

Nov., 1912. No. 37241 C.
Recent Developments in Pass
Brake Equipment. F. H. Parke. in Passenger views the development of the high-speed brake and the changes in rolling stock constantly requiring an increase in brake power. Refers to the electro-pneumatic development as probably the next improvement. Discussion. Ills. 6500 w.

MOTIVE POWER AND EQUIPMENT

Brakes

Pro St Louis Ry Club-Nov. 8, 1912. No. 38281.

Main Reservoir Failures. Discusses these failures and possible causes. 600 Ry & Loc Engag—Dec., 1912. 38014 C.

Recent Developments in Air Brake Practice. S. W. Dudley. Reviews prog-ress in this field during the past year. 1800 w. Elec Jour—Jan., 1913. No. 39439.

Electrically Operated Air Brakes. Discusses the development of electro-pneumatic brakes. 3000 w. Ry & Loc Engng

—Feb., 1913. No. 39658 Č.

The Electro Pneumatic Brake. N. A. Campbell. Discusses the system in which the application magnet valves make local brake pipe reductions. General discussion. 9000 w. Pro N Y R R Club—Jan. 17, 1913. No 39942.

The Transmission of the Brake Action of the Atmospheric Brakes Used on Railways. A. Fliegner. Examines how the transmission works, taking all resistances, as far as possible into consideration. 9000 w. Bul Int Ry Cong—Feb., 1913. No. 40166 G.

Frictional Resistance. Considers some of the effects of applying a brake shoe to a revolving car wheel. Gives tables from the Galton-Westinghouse tests, illustrating the experimental apparatus. 2500 w. Ry & Loc Engng-March, 1913. 40282 C.

Initiation and Propagation of Quick Action. Information from a paper by P. H. Donovan read before the Air Brake Assn. Gives results of an exhaustive series of tests. 1500 w. Ry & Loc Engng—April, 1913. No. 41031 C. Car Brake Leverage. An explanation of the leverage problem. 1600 w. Ry & Loc Engng—April, 1913. No. 41030 C. Sauvage Air Brake Attachments. Il-

Sauvage Air Brake Attachments. Illustrations showing pipe connections, and a view of the operating parts, with description. 800 w. Ry & Loc Engag—May, 1913. No. 41842 C.

Modern Air Brake Equipment as Applied to Steam Roads. Charles U. Joy. Extracts from a paper read before the New England R R Club. Describes types and their action. 3300 w. Ry & Engng Rev.—June 14, 1913. No. 42859.

Cross Compound Compressors. Drawings and description, 2200 w. Ry & Loc Engng—Sept., 1913. No. 44856 C.

Axleboxes Locomotive Axleboxes. The present number discusses the design. Ills. 1500 w. Mech Wld—July 18, 1913. Serial, 1st part. No. 43959 A.

Boiler Inspection

Locomotive Boiler Inspector's Report. John F. Ensign. First annual report of the chief inspector of locomotive boilers to the Inter-State Commerce Commission. 3000 w. Boiler Maker-Jan., 1913. No. 38968.

Box Cars

Box Car Construction as Viewed by a Repairer. H. S. Fentress. A critical discussion of features of design and construction. 1500 w. Am Engr-May, 1913. No. 41837 C.

Brakes

Automatic Vacuum Brakes with Revolving Rings (Frein à vide automatique à anneau roulant). Describes action of piston encased with rubber rings in the Massard, Jourdain and Monneret system. Ills. 2200 w. All Indus-Oct., 1912. No.

Continuous Braking on Long Freight Trains (Freinage continu des longs trains de Marchandises). J. Netter. Experiments in Austria with quick acting automatic vacuum brakes. Ills. 8000 w. Tech Mod-Nov. 1, 1912. No. 37510 D.

Rapid Acting Vacuum Brake Trials in Gives results of the trials Austria. made on the Austrian State Railways last September, on behalf of the sub-commission of l'Unité Technique. 1500 w. Ry Gaz, Lond—Jan. 17, 1913. No. 39464 A.

Differential Compound Band-Couplings (Differential-Verbund-Bandkuppling). F. Springer. A study of the action of brakes 1700 w. Zeitschr of this type. Ills. des Ver deutscher Ing-Dec. 21, 1912. No. 39041 D.

Undesired Quick Action of Brakes. Abstract of a paper by C. N. Remfry. Gives instructions for triple valve cleaners. 2000 w. Ry Age Gaz (Mech Ed)—June, 1913. No. 42683 C.

The Effect of Changed Operating Conditions and Modern Rolling Stock on the Brake and What is Being Done to Make This Money-Saving or Money-Losing Apparatus as Efficient as Heretofore. Walter V. Gurner and P. H. Donovan. Ills. 68 pp. Pro Ry Club of Pittsburgh—April 25, 1913. No. 43755 C. The Braking of Freight Trains by the

Hardy Continuous Vacuum Brake (Le Freinage des Trains de Marchandises par le Frein continu a vide Hardy). Jacques Neblinger. Review of brake tests in recent years, and detailed description of the Hardy brake. Ills. 3600 w. Genie Civil—Aug. 2, 1913. No. 45345 D.

Braking Power Problems. Considers problems arising from the introduction of heavier cars and locomotives, high speed

Braking

MOTIVE POWER AND EQUIPMENT

Car Repairs

and increase in traffic. 2000 w. Ry & Loc Engng—Oct., 1913. No. 45596 C.

Brake Equipment. L. G. N. Illustrated description of the development of the triple valve of the L. G. type. 1200. w. Ry & Loc Engng—Oct., 1913. 45595 C.

See also Automatic Stops, under Conducting Transportation.

Braking

Wheel Sliding Under Heavy Passenger Equipment. John P. Kelly. Discusses points of importance under modern conditions of heavy brake applications. General discussion. 10900 w. Pro Cent Ry Club-Nov. 8, 1912. No. 38622 C.

Car Building

Hard Wood for Railway Cars (Harthölzer für den Eisenbahnwagenban). Dr. Weiskopf. An economic study of available materials, and experimental tests for compression and tension. Ills. 1st part. 3000 w. Glaser's Ann—Mar. 15, 1913. No. 41454 D.

Car Cleaning

Scientific Cleansing of Railway Coaches. J. T. Ainslie Walker. Discusses the sanitary condition of railway cars, the proper cleansing, etc. Ills. 1800 w. Ry Age Gaz—Feb. 21, 1913. No. 39981.

Car Construction New Steel Car Plant at Michigan City. Illustrated description of interesting car building equipment. 1000 w. Ir Age -March 6, 1913. No. 40335 C.

Car Floors

Treatment and Finish of Passenger Car Concrete Floors. A committee report presented before the Master Car & Loc. Painters' Assn. Considers the treatment and finish of such floors. 3000 w. Ry Mas Mech—Dec., 1912. No. 38259 C.

Car Heating

History of Passenger Car Heating. Calvin S. Parker. Considers heating by the circulation of hot water, steam heating and the methods, direct steam heating, vapor or atmospheric pressure systems, and the Parker no-drip system. Also short paper by Jas. F. McElroy. Ills. 6000 w. Ry Mas Mech—Aug., 1913. No. 44468 C.

Car Inspection

Car Inspection. Lewis C. Ord. Read before the Can. Ry. Club. Explains the M. C. B. rules of car interchange and their object. 6000 w. Ry Mas Mech— Dec., 1912. No. 38260 C. Car Lighting

Train Lighting. H. A. Currie and Ben-jamin F. Wood. Reviews the subject from the time candles were used, describing in outline the early methods, and discussing the later systems. 8000 w. Jour Am Soc of Mech Engrs-Jan., 1912. No. 39351 D. Postal Car Lighting. Gives information from a recent bulletin describing the lighting system. 2000 w. Ry Age Gaz

Jan. 24, 1913. No. 39402. Postal Car Illumination Tests. results of extensive tests made by the Baltimore and Ohio and used as a basis of the new government specifications. 1500 w. Ry Age Gaz—March 21, 1913.

No. 40744.

Postal Car Illumination Tests by the Baltimore & Ohio Railroad. Gives results of investigations. 1200 w. Ry & Loc Engng—April, 1913. No. 41033 C. Mazda vs. Carbon Lamps for Car

Report of tests made by the Lighting. Cleveland Ry. Co. to determine comparative efficiencies, with results. Elec Trac-March, 1913. No. 40718.

Electric Battery Lighting for D-Trains and Sleeping Cars on the Prussian Railways (Elektrische Sammlerbeleuchtung für D-Zug- und Schlafwagen der Preussischen Staatsbahn). Herr. Wilcke. Discusses the carrying arrangement on new cars. Ills. 4000 w. Elek Kraft u Bahnen—June 24, 1913. No. 43547 D. Vickers Patent S. B. System of Train

Lighting. Illustrated description of an improved system of train lighting using only a single battery. 1500 w. Elec Rev, Lond—Sept. 12, 1913. No. 45283 A.

Specifications and Rules for Douglas Fir Car Material. Gives rules recently adopted by the West-Coast-Lumber Mfr. Assn. 1500 w. Ry Age Gaz—Sept. 26, 1913. No. 45443.

Car Painting

Baked Enamel Painting on the Cars of the Hudson & Manhattan Railroad. lustrates and describes a method of car painting by which cars can be put through the shop in two days. 2500 w. Elec Ry Jour—Jan. 25, 1913. No. 39412. Master Painters' Association. Report

of convention, including important reports on finishing steel passenger train cars, paint protection for steel equipment, and paint tests. 5500 w. Ry Age Gaz—Sept. 19, 1913. No. 45259. Theory and Practice of Painting a Mod-ern Steel Passenger Car. J. W. Lawrie.

Discusses the functions and essential properties of pigments and vehicles indicated in general. 4000 w. Sci Am Sup -Oct. 11, 1913. No. 45759.

Car Repairs

Growing Cost of Freight Car Repairs. F. F. Gaines. Discusses some of the causes; also suggestions for changes in design and methods to reduce it. 2000 w. Am Engr-April, 1913. No. 41093 C.

Car Roofs

MOTIVE POWER AND EQUIPMENT

Control Valves

Car Roofs

The Car Roof Problem. Explains the difficulties encountered in the construction of car roofs, illustrating some states of dilapidation. 700 w. Ry & Engng Rev— May 31, 1913. Serial. 1st part. No. 42579.

Cars

Steel Coaches for the New York Central. Drawings and description. 900 w. Ry Age Gaz—Feb. 21, 1913. No. 39980.

New York Central Lines Steel Coaches. Illustrated detailed description of new equipment. Exceptionally complete insulation, and strong end construction are noticeable. 2500 w. Am Engr—Feb., 1913. No. 39722 C.

New Family Saloons, Central Argentine Railway. Illustrated description of 1500 w. Ry Gaz, Londfine coaches Feb. 14, 1913. No. 40120 A.

Description of 54 Foot Corridor Composite Carriage of the Midland Railway of

England. D. Bain. 1100 w. Bul Int Ry Cong—April, 1913. No. 41685 G. Fifty-Ton Low Side Gondola. Illustrated description of a steel underframe, forty foot car, with drop ends, for the Central R. R. of New Jersey. 900 Am Engr—April, 1913. No. 41094 C. 900 w.

Steel Passenger Car Design. A symposium of papers prepared by experts for presentation before the New York meeting of the A. S. M. E. Ills. 5500 w. Ry Age Gaz-April 11, 1913. Serial. 1st

part. No. 41171.

Car Efficiency. Jos. R. Cavanagh. Explains the present practice of car handling and car hire and suggests a solution of the problem of car interchange by organizing a Clearing House. 2500 w. ganizing a Clearing House. 2500 w. Pro St. Louis Ry Club—April 11, 1913. No. 42325.

Railway Cars Exhibited at the Turin International Trade and Industrial Exposition, 1911 (Die auf der interna-tionalen Industrie- und Gewerbeausstel-lung Turin 1911 gezeigten Eisenbahn-wagen). Herr Neubert, This first part describes the various Italian cars exhibited. Ills. Serial. 1st part. 1800 w. Gläsers Ann — April 15, 1913. No. 42125 D.

Passenger Coaches of the Dutch Indies Railway Company (De rijtuigen der Ned-Indische Spoorweg Maatschappij). B. M. Gratama. General dimensions and construction of these Holland-built cars. Ills. and plate. 2600 w. De Ingeniur-May 3, 1913. No. 42165 D.

Standard Box Car Construction. Reviews efforts made tending toward the development of a standard type. Ills. 3000 w. Ry Mas Mech—June, 1913. Serial.

1st part. No. 42853 C.

Special 75-Ton Flat Car. Mounce. Illustrated description of a flat car for transporting turbine wheels 16 ft. 2 in. in diameter, built by the Erie R. R. 700 w. Ry Age Gaz (Mech Ed)
—July, 1913. No. 43426 C.

Method of Designing a Steel Gondola Car. L. W. Wallace. 2nd prize paper. Shows the method of designing the parts of a steel gondola freight car that are usually given theoretical consideration. Ills. 4500 w. Ry Age Gaz (Mech Ed)
—July, 1913. No. 43425 C.

Box Car for Grain and Coal Traffic. Illustrated description of Burnett hopper bottom grain cars built by Canadian Pacific. 600 w. Ry Age Gaz—July 11, 1913. No. 43664.

Improved Methods of Freight Car Construction. R. W. Schulze. Discusses effi-

cient design. Ills. 1800 w. Ry Age Gaz (Mech Ed)—Aug., 1913. No. 44267 C. Steel Frame Box Cars for the Frisco. Illustrated detailed description of cars designed to be water-proof, burglar-proof, grain-leakage-proof, and to protect the lading from damage. 1200 w. Ry Age Gaz-Oct. 3, 1913. No. 45661.

The Steel Passenger Car and Existing Passenger Equipment. First of a series of articles reviewing the situation as it exists. 1300 w. Ry & Engng Rev—Oct. 25, 1913. Serial, 1st part. No. 46221.

See also Steel Cars, under Motive Power and Equipment.

Car Trucks

Freight Car Truck Experiments. Abstracted from Prof. Endsley's report to the American Steel Foundries. Gives results of a series of tests on square and loose freight car trucks. 2000 w. Engr—Jan., 1913. No. 38967 C.

Car Ventilation

Ventilation of Steel Sleeping Cars. Thomas R. Crowder. Abstract of a paper read before the Cong. on Hygiene and Demography. Reports results obtained with exhaust ventilators and no deck sashes. 3500 w. Ry Age Gaz-Feb. 14, 1913. No. 39852.

Connecting Rods

Locomotive Connecting Rods. H. A. F. Campbell. Discusses the formulæ and constants used by the Baldwin Locomotive Works. 2500 w. Am Engr—April, 1913. No. 41088 C.

Control Valves

Control Valve Test Rack. Illustrated description of the Westinghouse control valve test rack, which is to determine the fitness for service of the No. 3E and 3D control valves. 1200 w. Ry & Loc Engng—July, 1913. No. 43402 C. Couplers

MOTIVE POWER AND EQUIPMENT

Electrification

Counter

The Problem of the Automatic Coupling of Wagons on European Railways. A Campiglio. Reviews the development of Automatic coupling, describing systems. Ills. 3600 w. Bul Int Ry Cong—June, 1913. No. 43171 G.

Car Coupling with the Boirault Automatic Coupler (L'attelage automatique des wagons par l'auto-coupeur Boirault). G. Espitallier. Detailed description of the construction and action. Ills. 4500 w. Genie Civil—June 14, 1913. No. 43089 D.

Coupling

The Problem of the Automatic Coupling of Wagons on European Railways. A. Campiglio, and a letter by L. Boirault. 2600 w. Bul Int Ry Cong—Oct., 1912. No. 46222 G.

Coupling Rods

Note on the Working of Coupling Rods. G. L'Hoest. Gives an analysis of the working. 3400 w. Bul Int Ry Cong —Dec., 1912. No. 38675 G.

Deck Shields

Locomotive Deck Shields. Walter R. Hedeman. Describes shields designed to prevent the loss of coal through the large openings in the firing decks of locomotives, and through the openings between the engine and tender. Ills. 1000 w. Am Engr—March, 1913. No. 40340 C.

Draft Gear

Testing of Draft Gear Prior to Purchasing. Bruce V. Crandall. Considers the necessity of testing of draft gear, to prove fitness, for comparison, and to meet certain specifications; the requirements, etc., general discussion. 1200 w. Pro W Ry Club—April 15, 1918. No. 42400 C. Driving Box

Flangeless Shoes and Wedges and Improved Driving Box Construction. C. D. Ashmore. Illustrated description. 800 w. Am Engr—Nov., 1912. No. 37809 C.

Dynamometer Cars

The Dynamometer Car. Information concerning the use of this device for measuring the force exerted in overcoming resistance, and recording the distance and time. 2500 w. Ry & Loc Engag—Dec., 1912. No. 38015 C.

Electric Locomotives

Articulated Truck Electric Locomotives, N Y., N. H., & H. R. R. Illustrated description of engines under construction which combine the best features for heavy locomotives as shown by road service. 2000 w. Ry Mas Mech—Nov., 1912. No. 37848 C.

Problems of Electric Locomotive Design. N. W. Storer. A discussion and brief description of the types now in

service. 2500 w. Am Engr.—Nov., 1912. No. 37805 C.

Southern Pacific Electric Locomotives. Illustrated description of one of the new 60-ton electric freight locomotives 1200 w. Mach (Ry Ed)—Nov., 1912. No. 37349 C.

Southern Pacific Electric Locomotives. Illustrated description of a 50-ton electric locomotive for freight and switching service. 1200 w. Ry Age Gaz—Nov. 22, 1912. No. 37762.

A New 1500 H. P. Electric Locomotive for the Compagnie des chemins de fer du Midi (Nouvelle locomotive électrique de 1500 chevaux de la Compagnie des chemins de fer du Midi). Principal characteristics and details of construction. Ills. 8400 w. Tech Mod—Jan. 1, 1913. No. 39074 D.

Electric Traction

Working Practice with Electric Traction at Simplon (Betriebserfahrungen bei der elektrischen Zugförderung am Simplon). Bruno Kilchenmann. The power plants, wiring and locomotives in use to and through the tunnel. Ills. 4200 w. Elek Kraft u Bahnen—July 24, 1913. No. 44683 D.

Prof. Kapp's Address to Section "G" of the British Association. Abstract of an address at Birmingham, Eng., on the advantages of the various systems of electric traction. 4500 w. Elect'n, Lond—Sept. 12, 1913. Serial, 1st part. No. 45290 A.

40230 A.

Electrification
Electrification of the Railway Lines of Brussels, Circle and Suburban. (L'Electrification des Lignes de Chemins de fer de la Ceinture et de la Banlieue de Bruxelles). J. Carlier. Describes project for connecting the railway stations in Brussels by short direct routes in connection with existing local and suburban lines. Electric system and motive power discussed. Ills. 45 pp. Rev Soc Belge d'Electriciens—Aug., 1912. No. 37482 E. Discussion on "The Relation of Central

Station Generation to Railway Electrification." Samuel Insull. At New York, April 5, 1912, and Boston, Mass, June 26 and 27, 1912. 22000 w. Pro Am Inst of Elec Engrs—Dec., 1912. No. 38513 F. Electrification of the Melbourne Rail-

Electrification of the Melbourne Railways. Abstract of the recent report on the direct-current and single-phase systems. Also editorial. Ills. 5800 w. Ry Gaz, Lond—Nov. 22, 1912. No. 38023 A.

The Electrification of Main Lines. G. Brecht. Trans. of an article in Elek. Kraft. und Bahnen. Gives reasons for the slow advance and detailed discussion

Electrification

of the systems for main line service. 8000 w. Elect'n, Lond—Nov. 29, 1912. Serial. 1st part. No. 38112 A.

The Electrification of Main Lines (Einiges über Elektrisierung von Hauptbahnen). G. Brecht. Outlines points to be considered in undertaking extensive electrification; choice of systems, locomotives, etc. Ills. 6600 w. Elek Kraft u Bahnen—Nov. 14, 1912. No. 38470 D. Extracts from Bulletin No. 4 of the

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Steam Road Electrifications. A. H. Armstrong. Discusses mountain grade service and shows the economy of electric 4500 w. Elec Ry Jourlocomotives. Jan. 4, 1913. No. 38824.

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Experimental Traction with Monophase

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Principles of Electric Railroading. C. L. de Muralt. Reviews some of the fundamental laws that underlie all propulsion of trains on tracks, showing how they affect the technical as well as the financial side of electrification. 1200 w. Ry Age Gaz—April 4, 1913. Serial. 1st part. No. 41074.

The Development of the Electric Railway (Die Entwicklung der elektrischen Bahnen). P. Poschenrieder. Progress made since the first experiments made by Faraday in 1821. Ills. 4800 w. Elek u (Special)—March, 1913. No. Masch 41493 D.

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MOTIVE POWER AND EQUIPMENT

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Electrification of British Railways. A survey of past and present electrification work by British steam railroads. 3500 w. Elec Ry Jour—May 3, 1913. No. 41873.

Trunk Line Electrification. Charles P. Kahler. Outlines steam railroad conditions in the West and gives some of the results which would occur with electric operation. 9500 w. Pro Am Inst of Elec Engrs—May, 1913. No. 42453 F.

Single-Phase Motor Car Equipments for Trunk Line Service. E. F. W. Alexanderson. Explains the priniciples of the single-phase commutator motor, and the theory, design, mechanical construction, electrical characteristics and operation. 3000 w. Gen Elec Rev—May, 1913. No. 41816 C.

The Use of Single-Phase Commutator Motors for Electric Traction on Long-Distance Railways. Stanley Parker Smith. A discussion of the technical problems involved in the electrification of main lines. 40 pp. Inst of Civ Engrs—No. 4002. No. 42368 N.

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2400-Volt Railway Electrification. H.
M. Hobart. Discusses the altered conditions which often make electrical operation economically superior to steam operation. 3500 w. Pro Am Inst of Elec Engrs—May, 1913. No. 42452 F.

Notes on the Midi D. C. and A. C. Elec-

Notes on the Midi D. C. and A. C. Electrifications. Describes an 850-D. C. third-rail local system and an experimental section operated at 16 2/3 cycles, 12,000 volts, single phase. Ills. 2500 w. Elec Ry Jour-May 3, 1913. No. 41872.

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The Electrification Schemes of the Chemin de Fer du Midi. M. Jullian. (Abstract.) A summary of the reasons for electrifying certain sections and adopting single-phase traction with description of the plant, equipment, etc. 6000 w. Elect'n, Lond.—May 30, 1913. No. 42765 A.

High-Voltage Continuous Current Traction (Sur la traction à courant continu à haute tension). M. Gratzmuller. A committee report on the availability of continuous current for heavy duty, and results on the lines now using it. Ills. 11200 w. Bull Soc Int d'Électriciens—Apr., 1913. No. 42186 F.

Electrification Progress in the United States. Reviews the progress in steam railroad electrification from the earlier tunnel and terminal work to the long distance and mountain railway projects. Maps. 2500 w. Elec Ry Jour—May 31, 1913. No. 42720.

Railway Electrification Problems in the United States. H. Parodi. (Abstract.) Considers the various aspects of the prob-

lem when the substitution of electricity for steam appears to be justified by considerations of safety and economy. 4500 w. Elect'n, Lond—May 30, 1913. No. 42766 A.

Maintenance on the Electrified Section of the Eric Railroad. Outlines the present condition of an installation with single-phase current made six years agree Rochester, N. Y. Ills. 1500 w. Elec Ry Jour—June 7, 1913. No. 42718

The Electrification of the State Railways: The Paris Suburban Lines. A. N. Mazen. (Abstract.) An account of the traffic, working, choice of system, station etc. 2500 w. Elect'n, Lond—May 30 1913. No. 42767 A.

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Individual Paper on Maintenance of Electric Equipment. C. H. Quereau. A discussion from the viewpoint of a steam motive-power man. 3000 w. Ry & Loc Engng—July, 1913. No. 43404 C.

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The Utilization of Power in the Future Electric Operation of the Swiss Railways. Dr. W. Kummer. Discusses the amount of power required, the conditions under which the power stations could be best utilized, and related topics. 3200 w. Bul Int Ry Cong—July, 1913. No. 43982 G.

Electrification of the Butte, Anaconda & Pacific. Describes one of the largest installations of electrical equipment for steam railroad service and the first in the United States to use d. c. locomotives on as high a potential as 2400-volts. Ills. 2500 w. Ry Mas Mechaug., 1913. No. 44470 C.

Steam Railroad Electrification. Charles P. Kohler. Outlines the apparatus and equipment needed to operate a railroad by electric power, showing the comparative cost of steam and electricity, and some resulting improvements. 4000 w. Jour Assn of Engng Socs—Sept., 1913. No. 45461 C.

Mountain Railway Electrification. A study of the Tehachapi Pass. Allen H. Babcock. A study of the relative merits of steam and electric equipment. 6000 w.

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Why Steam Railroads Are Electrifying. W. R. Stinemetz. Brief notes on the application of the electric system at terminals, in tunnels, and on grades; locomotive development and use on main lines. Ills. 2000 w. Elec Jour—Oct., 1913. No. 46321.

Heavy Electrification Tendencies. W. S. Murray. Discusses the general aspects and reviews the tendencies of the present time. 2000 w. Elec Jour — Oct., 1913. No. 46318.

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Assignment of Steam and Electric Locomotives, Passenger and Freight Train Cars, and Work Equipment Cost to the Several States, and to Operating Divisions Within States. A. I. T. Thompson, Discussion in a paper to the Mississippi Valley States conference. 4000 w. Engng & Con—June 25, 1913. No. 43195.

Feed-Water

Locomotive Feed-Water Heating. Illustrated description of the Weir locomotive feed pump and heater combination. 700 w. Engr, Lond—Dec. 20, 1912. No. 38899 A.

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The Design of Locomotive Fireboxes. J. D. Twinberrow. A study showing that broken stays and cracks are usually due to characteristics of the design. Ills. 2500 w. Engng—Nov. 15, 1912. No. 37822 A.

Tests Relating to the Pulling Out of Stays and the Deformation of the Flat Walls of Fire-Boxes. M. V. Gololobor. Report of tests made to determine the limiting dimensions permissible for the thickness of firebox walls and for the heads of the stays connecting them. 4000 w. Bul Int Ry Cong—Jan., 1913. No. 39555 G.

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Results of Comparative Fire-box Tests. A summary of tests recently conducted at Coatesville, Pa., with brief references to methods employed. 1800 w. Ry Age Gaz—Feb. 7, 1913. No. 39715.

Firebox Roof Girder Formula. F. A.

Firebox Roof Girder Formula. F. A. Garrett. Gives chart and description of the principles involved, working out an example. 700 w. Boiler Maker—June, 1913. No. 42971.

Freight Care

Steel Freight-Car Equipment, Pennsylvania R. R. Illustrated detailed description of the underframing and other features adopted for these cars. 2200 w. Ry & Engng Rev—Nov. 2, 1912. No. 37269.

A Strong Box Car End. Illustrated description of the steel end being applied to the box cars of the N. Y. C. & H. R. R. R. 500 w. Am Engr—Jan., 1913. No. 38966 C.

Ninety-Ton High Side Gondola Car. Illustrated description of cars developed on the Norfolk & Western and equipped with specially designed six-wheel equalized trucks. 2000 w. Ry Age Gaz—Jan. 3, 1913. No. 38792.

Freight Car Troubles. J. C. Fritts.

Freight Car Troubles. J. C. Fritts. Discusses freight car troubles, their cause and effect, and suggests changes in present practice tending to economical maintenance. Ills. Discussion. 11000 w. Pro Cent Ry Club—Sept. 12, 1913. No. 46102 C.

Fuel

International Railway Fuel Association. An account of the meeting including among other reports those on self-propelled cars and semi-bituminous and lignitic coals. 8000 w. Ry Age Gaz—May 30, 1913. No. 42637.

Fuel Economy

MOTIVE POWER AND EQUIPMENT

Locomotive Boilers

Railway Fuel Association Convention. Abstracts of addresses and discussions. 8000 w. Ry Age Gaz (Mech Ed.)—June, 1913. No. 42680 C.

Sub-Bituminous and Lignitic Coal as Locomotive Fuel. Samuel B. Flagg. Extracts from a paper read before the Int Ry Fuel Assn. Considers the arrange-ments for using these fuels, the tendency to disintegrate upon exposure, giving data and results. 2500 w. Ry & Engng Rev June 7, 1913. No. 42709.

Powdered Fuel for Locomotives. Walter D. Wood. Calls attention to past mistakes in trying to use powdered fuel on locomotives, and how to use it successfully. 2500 w. Ry Age Gaz-July 4,

1913. No. 43477.

Fuel Economy Fuel Economy on a Trunk Line Rail-Dr. W. B. Landon. road. Discusses possible savings, inspection and some things it has accomplished. 4500 w. Ry & Engng Rev-Jan. 18, 1913. No. 39235.

Fuel Economy on the Rock Island. W. J. Tollerton. Explains the system adopt-1500 w. Ry Age Gaz—Jan. 17,

No. 39202. 1913.

Fuel Economy on the Buffalo, Rochester & Pittsburgh. H. C. Woodbridge. Drawings and description of a draft regulating damper and its operation. 1200 w. Ry Age Gaz—Feb. 14, 1913. No. 39854. The Coal Pile. J. S. Sheafe. Sugges-

tion for the care in the transportation, delivery, and burning of coal on railways. 2500 w. Ry Mas Mech—June, 1913. No.

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C. Buell. Gives a series of questions and suggestions emphasizing the necessity of giving detail attention to the fuel prob-3500 w. Ry Age Gaz-Aug. 8,

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Fuel Economy by the Engine Crew. M. E. Wells. Gives some interesting comparisons made, and discusses firing and overloading tanks at coal tipples. 800 w. Ry Age Gaz—Sept. 26, 1913. No. 45445.

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See Aerial Tramways, under MECHANI-CAL ENGINEERING, Transporting and Conveyina

Headlights

Headlight Tests. C. M. Larson. Detailed report of tests, with tables and discussion. 108 pp. Pro W Ry Club-Oct. 15, 1912. No. 37682 C.

Wisconsin Commission on Locomotive Abstract of a decision by Headlights. the Railroad Commission of Wisconsin as to which of the lights tested comply with the Laws of 1911. 1200 w. Ry Age Gaz —Dec. 13, 1912. No. 38189.

The Electric Arc Headlight for Loco-John G. D. Mack. motives. General remarks on the development of headlights, the types used, etc., stating the requirements and discussing particularly

the electric arc headlight. 3500 w. Wis Engr—Dec., 1912. No. 39311 C. Fundamental Principles of Head-Lamp Illumination. L. C. Porter and K. W. Discusses the standardization Mackall. of locomotive headlamps and the require-1200 w. Elec Wld-July 19.

No. 43841.

Installation and Maintenance of Electric Headlight Equipment. V. T. Kropidlowski. The present article describes a method of wiring which can be applied with an existing type of electric headlight equipment. 1200 w. Ry Age Gaz (Mech Ed)—July, 1913. Serial, 1st part. No. 43424 C.

Indicators

Locomotive Indicating Apparatus. Hal R. Stafford. Illustrates and describes methods used, giving general instructions for piping up indicators, and other information. 3500 w. Ry & Engng Rev—Jan. 11, 1913. No. 39113. Inspection Cars

Motor Inspection Cars (Motordraisinen). L. Merz. Illustrated review of several types of single-, double-, and multiple-seated inspection cars. 3600 w.

Motorwagen—Dec. 20, 1912. No. 39022 D. Track Inspection Car; Erie R. R. Il-lustrated description of a car designed particularly to ascertain track conditions in regard to the safety of high-speed trains. 1500 w. Eng News-Oct. 2, 1913. No. 45652.

Locomotive Boilers

The Locomotive Boiler and Means for Increasing Its Efficiency and Capacity. A. W. Whiteford. Discusses design, the value of fire-box heating surface, capacity, etc. General discussion. Ills. 1300 w. Pro S & S-W Ry Club. Nov., 1912. No 39937 N.

Inspection and Maintenance of Locomotive Boilers. John F. Ensign. Outlines some of the more important laws as to the use of safety appliances on railroads, and considers the requirements of the law in regard to inspection and repair of locomotive boilers. 5000 w. Pro St Louis Ry-Club—Feb. 14, 1913. No. 40397.

Locomotive Building

MOTIVE POWER AND EQUIPMENT

Locomotive Loads

Service Inspection and Repairs of Locomotive Boilers and Appurtenances. C. E. Lester. Gives the writer's views on boiler inspection. 2500 w. Boiler Maker June, 1913. No. 42970.

Maintenance of Locomotive Boilers. Report to the Am. Ry. Mas. Mech. Assn. Ills. 7500 w. Ry Mas Mech.—July, 1913.

No. 43772 C.

Locomotive Boiler Inspection. From an address by Garland P. Robinson before the Richmond R. R. Club. Illustrations of explosions, explaining causes, and information concerning inspection laws and the work of inspectors. 4000 w. Ry & Engng Rev—July 5, 1913. No. 43446.

Remarks Concerning the Efficiency and Capacity of Locomotive Boilers. W. L. Bean. Remarks on design and construction, with suggestions on firebox heating surface, volumes and grate areas, and means of improving combustion. Ills. Discussion. 5000 w. Pro St. Louis Ry Club—July 11, 1913. No. 44376.

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Materials Used in Locomotive Construction. S. Snell. Discusses the different materials used, and the purposes for which they are used. 1300 w. Mech Wld—April 25, 1913. Serial, 1st part. No. 41925 A.

Locomotive Combustion

Combustion in Locomotive Practice. J. T. Anthony. Discusses the problem of increasing boiler efficiency and the importance of the firebox. Ills. 6000 w. Ry Age Gaz-June 6, 1913. No. 42678.

Locomotive Cylinders

Steam Action in Locomotive Cylinders. Lawford H. Fry. Compares results ob-tained with saturated and superheated steam in the same pair of locomotive cylinders, showing how the economy due to superheating is affected by changes in to superneating is anected by changes in the speed, cut-off and boiler pressure. 8000 w. Engng—Jan. 3, 1913. Serial. 1st part. No. 39154 A.

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Notes on the Action of Connecting Rods (Note sur le Fonctionnement des Bielles d'accouplement). G. L'Hoest. Mathematical discussion. Extracted from Bulletin of the International Railway Congress. Ills. 6000 w. Rev Soc Belge d' Elec—Sept., 1912. No. 87488 E.

The Design of Tank Engines for Ex-

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No. 45040 A.

Reduced Live Loads on Railway Under-Bridges. J. D. W. Ball. Explains method of calculating bending moments and the distribution of loads on engines. 2500 w. Engr, Lond—Oct. 10, 1913. No. 45986 A.

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Life of Locomotive Fireboxes. Rommel. Considers the outwardly inclined water leg the most desirable, direction of rolling sheets important, materials, and that the single piece firebox is a mistake. Ills. 2500 w. Ry Age Gaz—July 18, 1913. No. 43797.

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Locomotive Loads

Experiments on the Determination of Limiting Loads for Locomotives (Verfahren zur Bestimmung der Belastungsgrenzen der Dampflokomotiven). Herr

Locomotive Lubricants MOTIVE POWER AND EQUIPMENT

Locomotives

Strahl. A mathematical discussion, with curves and tables. Serial 1st part. 5500 w. Zeit des Ver deutscher Ing-Feg. 15, 1913. No. 40539 D.

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Graphite as a Lubricant for Locomotives. L. H. Snyder. Explains the advantages and some of the special uses of flake graphite. 1800 w. Ry Mas Mech
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Locomotives for the Chicago & Western Indiana R. R. Illustrated detailed description of recently built locomotives, equipped with superheater, brick arches, and Baker valve gear. 500 w. Ry & Engng Rev—April 5, 1913. No. 41114.

The L. & N. W. Locomotive. Sir Gilbert Clauphton. Illustration and brief descriptions.

The L. & N. W. Locomotive. Sir Gilbert Claughton. Illustration and brief description of a 4-cylinder non-compound passenger engine. 400 w. Engr, Lond—April 11, 1913. No. 41397 A.

Compound Locomotives, Types Consolidation and Décapod, for the Chemin de fer du Nord (Note sur les locomotives compound, types "Consolidation," et "Décapod," de la Compagnie du Chemin de fer du Nord). M. Bonnin. Dimensions and features in design. Drawings. 3000 w. Rev gen des Chemins de Fer—Apr., 1913. No. 41517 G.

New Italian Locomotives—Group 685. Illustrations and brief description of four-cylinder "Prairie" type express locomotives for the Italian State Railways. 400 w. Engr, Lond—May 2, 1913. No. 42012 A.

The Oldest Engine on the Northern of France Railway. A. R. Bennett. Illustrated description of engine built in 1847 and altered in 1877 which is still at work. 500 w. Ry Gaz, Lond—June 13, 1913. No. 43134 A.

The L. and N. W. Locomotive. Sir Gilbert Claughton. Plate, illustrations and brief description. 200 w. Engr, Lond—June 6, 1913. No. 42891 A.

Express Passenger Locomotive Paris-Lyons-Mediterranean Railway. Illustrated description of a locomotive being shown at the Ghent Exhibition. Plate. 1500 w. Engng—May 16, 1913. No. 42537 A.

Three-Cylinder Locomotives. J. Snowden Bell. Extracts from a paper read before the Ry. Mas. Mech. Assn. An account of the origin and development of three-cylinder locomotives. 6000 w. Ry & Engng Rev—June 21, 1913. No. 43154.

Fourteen-Wheeled (1 F 1) Superheated-Steam Tank Locomotive of the Java State Railway. Mr. Metzeltin. Illustrated detailed description of a new design aiming at increase in power and reduction in cost of upkeep, with other advantages in construction and working 3800 w. Bul Int Ry Cong—July, 1913. No. 43981 G.

New Switchers for the C. & N. W. Ry. and C., B. & Q. R. R. Illustrates and describes two superheater switches. 1000 w. Ry & Loc Engng—July, 1912. No. 43401 C.

British Locomotives in 1912 (Les Locomotives Britanniques en 1912). L. Pierre-Guédon. A brief review of types and their actual services. Ills. 2200 w. Genie Civil—June 21, 1913. No. 43575 D.

The Locomotives at the Ghent Exposition (Les Locomotives à l'exposition de Gand). L. Pierre-Guedon. This first part illustrates and describes locomotives exhibited by the Chemins de fer de l'Est. Plate. Serial, 1st part. 3700 w. Genie Civil—July 12, 1913. No. 43580 D.

Some Recent American Locomotives. Describes engines representative of regular American locomotives for heavy traffic conditions. Ills. 3000 w. Engr, Lond—Aug. 8, 1913. Serial, 1st part. No. 44463 A.

Special Features of New Locomotives for the Atchison, Topeka & Santa Fe Ry. Illustrated description of features of interest in new 4-cylinder balanced compound passenger engines, and freight engines of the 2:8:2 class. 1200 w. Eng. News—Aug 14, 1913. No. 44368.

Heavy Power for the Northern Pacific. Illustrated description of new locomotives and the work they are doing. 1200 w. Ry Age Gaz—Aug. 29, 1913. No. 44808.

An Important Locomotive Development. Illustrates and describes a large French decaped locomotive for use in the French coalfields. 1000 w. Sci Am Sup—Oct. 11, 1913. No. 45758.

Huge Decapod Locomotives for Service in the French Coalfields. Illustrated description of locomotives used on the Northern Ry. of France, for hauling heavy mineral train-loads over unusually severe gradients. 900 w. Ir & Coal Trds Rev—July 25, 1913. No. 44193 A.

The Sulzer-Diesel Locomotive. Illustrated detailed description of a Dieselengined locomotive built for the Central Railway Department of the Prusso-Hessian State Ry., Berlin, designed for fast traffic. Also editorial. 3500 w. Engng—Sept. 5, 1913. No. 45154 A.

Locomotives

MOTIVE POWER AND EQUIPMENT Locomotives (Articulated)

The First Diesel Locomotive. Illustrated detailed description of this Dieselmotor operated locomotive for express service on the Berlin-Madgeburg line. 2000 w. Sci Am-Sept. 20, 1913. No. 45231.

The First Diesel Locomotive. Illustrated description and drawings of the first railway locomotive operated by a Diesel crude-oil engine. Also editorial. 3500 w. Eng News-Oct. 2, 1913. No. 45651.

Gasoline Freight and Switching Locomotive. Illustrated description of a locomotive for the Minneapolis and Northern Ry., having a maximum capacity of about 20 freight cars. 1500 w. Ry Mas Mech—Sept., 1913. No. 45238 C.
Inspection Locomotive on the Reading.

Characterized by a boiler of small size and large capacity and a large observation room. Ills. 1000 w. Ry Age Gaz (Mech Ed)—Sept., 1913. No. 44956 C.

Ten Wheel Type Locomotive for the St. Louis Southwestern. Gives illustrations, dimensions, and brief description of tenwheel 4-6-0 type, and consolidation 2-8-0 type. 1000 w. Ry & Loc Engng—Sept., 1913. No. 44855 C.

Powerful Locomotives for the Compagnie Bone-Guelma et Prolongements

(Note sur les locomotives puissantes de la Compagnie Bone-Guelma et Prolonge-ments). M. L. Felix. Brief general description of stock for heavy mineral transport in Tunis. Ills. and Plates. 1200 w. Rev Gen des Chemins de Fer— Aug., 1918. No. 45312 G.

Locomotives at the Ghent Exhibition (Les locomotives à l'exposition de Gand). L. Pierre-Guédon. General description of types exhibited by two French railways. 1500 w. Genie Civil-Aug. 16, 1913. No. 45350 D.

Great Southern & Western Railway Express Passenger Locomotives. Illustrated description. 700 w. Ry Gaz, Lond—Sept. 26, 1913. No. 45733 A.

New Locomotives for the Santa Fe.

Illustrated description of a Pacific type locomotive with 6-wheel tender trucks, and a mikado type locomotive. 1300 w. Ry Age Gaz (Mech Ed)—Oct., 1913. No. 45665 C.

Innovations on the Locomotives of the Prussia-Hesse State Railways (Neuerungen an Lokomotiven der preussisch-hessischen Staatseisenbahnen). G. Hammer. Describes the testing apparatus, temperature recorders, etc., recently installed. Ills. Serial, 1st nart. 3500 w. Glaser's

Ann—Oct. 1, 1913. No. 46016 D.
See also Superheating, under Motive
Power and Equipment.

Locomotives (Articulated)

Powerful 2-8-8-0 Type Locomotive. Illustrated description of Mallet locomotives, having a 100,000-pound tractive effort when working compound, in use on the Great Western. 2500 w. Am Engr.
—Nov., 1912. No. 37308 C.

A Study on Mountain Locomotives, and Especially Compound Articulated Locomotives. Mallet System (Étude sur les locomotives de montagne et particulièrement la locomotive compound articulee, système Mallet). M. A. Mallet. Chapters on locomotive adhesion, adhesive weight and tractive effort, curve effects, wheel bases, early systems, articulation, Mallet system, and usage in the United States. Ills. 194 pp. Mem Soc Ing Civ de France—Aug., 1912. No. 87484 G.

Mallet Articulated Compound Locomotive (2-8-8-0 Type); G. N. R., U. S. A. Illustrated description of engines for the Great Northern Ry. 900 w. Engng—Nov. 29, 1912. No. 38129 A.

Single Mallet for High Speed. G. I. vans. Illustrated description of an articulated locomotive with four equal size cylinders grouped at the center of the wheel base and designed for speeds up to 50 miles per hour. 2500 w. Ry Gaz, Lond—Dec. 13, 1912. No. 38386 A.

New Garratt Locomotives, Tasmanian Government Railways. Illustrations and descriptions of new types, fitted with Schmidt's superheating apparatus. w. Ry Gaz, Lond—Jan. 3, 1913. 39145 A.

Mallet Compound Locomotives for the Missouri, Oklahoma & Gulf Ry. Illustrated description of articulated locomotives of the 2-6-6-2 type. 1000 w. Ry & Engng Rev—Jan. 4, 1913. No. 38837. 2-6-6-2 Tank Locomotive With Super-

heater for the Java Railway (Locomotive-tender à six essieux couplés et à surchauffe, des Chemins de fer de Java). Detailed description of this locomotive. Ills. and plate. 1500 w. Génie Civil— Dec. 14, 1912. No. 39085 D. Dec. 14, 1912.

A Heavy Switching Locomotive with Side Sandboxes. Illustrated description of a Mallet shifting locomotive with four sandboxes mounted at the sides of the boiler, in use at Lorain, O. 500 w. Eng News—Feb. 6, 1913. No. 39705.

Mallet Locomotives on the Harzquer and Brocken Ry. (Die Mallet-Lokomotive der Harzquer-und Brockenbahn). Details of construction. Ills. and Plate. 5500 w. Zeitschr des Ver deutscher Ing— Jan. 25, 1913 No. 40044 D. Locomotives for the Rhodesian Rail-

ways. Illustrated description of the lat-

Locomotives (Electric) MOTIVE POWER AND EQUIPMENT Locomotives (Atlantic)

est development in these narrow gauge locomotives. 500 w. Engr, Lond—March 7, 1913. No. 40713 A.

Distribution of Power in Mallets. Paul Weeks. Considers valve setting and cylweeks. Considers valve setting and tylinder ratios when the weight on the two groups of drivers is unequal. 2500 w. Am. Engr.—May, 1913. No. 41835 C. Notes on Articulated Locomotives (Note sur les locomotives articulées). Lionel Wiener. A comprehensive review

of the three main groupings of articulated locomotives, and the special types under each main head. Ills. Serial, 1st

part. 52 pp. Rev gen des Chemins de fer—May, 1913. No. 42185 G. Mallet Compound Locomotive for the Pennsylvania R. R. Illustrated description of an engine of the 0-8-8-0 type, primarily intended for pushing service. 1000 w. Ry & Engng Rev—July 26, 1913.

No. 43938.

Mikado and Mallet Type Locomotives for the Northern Pacific Ry. Illustrates and describes examples of the 2-8-2 type and 2-8-8-2 type recently delivered. 1200 w. Ry & Engng Rev—Sept. 6, 1913. No. 45055.

Powerful Articulated Narrow Gage Locomotives for Tasmania. Illustrates and describes new types designed for operation on a gage of 3½ ft. 1000 w. Sci Am Sup—Sept. 20, 1913. No. 45233. Simple Articulated Locomotives for the

Antafogasta & Bolivia Ry. Illustrated description of engines and tender. 700 w. Ry & Engng Rev-Oct. 25, 1913. 46219.

See Locomotives (Electric), under Motive Power and Equipment.

Locomotives (Atlantic)
Tests of an Atlantic Type Passenger Locomotive, Pennsylvania R. R. A report of the tests on a superheater Atlantic type locomotive made at Altoona, Ills. 4500 w. Ry & Engng Rev—Aug. 2, 1913. Serial, 1st part. No. 44150.

Locomotives (Diesel)

Diesel Locomotive Built by Sulzer Bros. Illustrated description of this locomotive for the Prussian-Hessian State Rvs. 700 w. Ry Gaz, Lond—Oct. 3, 1913.

45847 A.
The First Thermo-Locomotive (Die erste Thermo-Lokomotiv). F. Sternen-berg. Detailed description of the first Diesel-engined locomotive. Ills. 3300 w. Zeit des Ver deutscher Ing-Aug. 23, 1913. No. 46034 D.

Locomotives (Electric)

Alternate-Current Locomotive of 1500 H.P. Dr. van Cauwenberghe. Abstract trans. from *Elek. Zeit*. Illustrated description of the design. 1200 w. Elect'n, Lond—Jan. 31, 1918. No. 89777 A.

The New Gas-Electric Locomotive of the Minneapolis, St. Paul, Rochester & Dubuque Electric Traction Company. General view and description of a locomotive to be put in service about May 1st, on an electric suburban railroad, with statement of economic advantages expected. 1500 w. Engng & Con—Feb 5, 1913. No. 39704.

A French Single-Phase Locomotive. Illustrates and describes a 1500-h.p. locomotive being tried by the Midi Ry. 1500 Elec Ry Jour-Feb. 15, 1913. No.

39878.

Maintenance of the Pennsylvania Railroad Electric Locomotives. Illustrated description of the methods used in the inspection and repair of the side-rod type of locomotive equipped with jack shafts. 7500 w. Elec Ry Jour—March 15, 1913. No. 40682.

Accumulator Mine Locomotives (Locomotiva elettriche ad accumulatori per miniere). J. Rechtenwald. A review of present types. Ills. Serial. 1st part. 1800 w. Industria—Feb. 2, 1913. No. 40611 D.

Articulated Electric Locomotives for the New York Central. Illustrated description of the eight-motor articulated, 600-volt direct-current electric locomotives placed in service. 1500 w. Ry Age Gaz—April 11, 1913. No. 41175.

Most Powerful Electric Locomotives in the World, N. Y. C. & H. R. R. R. Illustrated description of the 600 volt, directcurrent locomotives and related informa-3000 w. Ry Mas Mech-May, tion.

1913. No. 42203 C.

1-C-1 Locomotives, Group 032 of the Italian Railways (1-C-1 Lokomotiven, Gruppe 032 der Italienischen Staatsbahnen). J. Buchli. Details of the mechanical and electrical construction and equipment. Ills. 2400 w. Elek Kraft u Bahnen—April 24, 1913. No. 42158 D.

The Thomson-Houston Electric Locomotive System for the Compagnie des Chemins de fer du Midi (Locomotive électrique systéme Thomson-Houston de la Compagnie des Chemins de fer du Midi). J.-A. Montpellier. Details of the electrical equipment of these thoroughly satisfactory types. Ills. 6600 w. Tech Mod—April 15, 1913. No. 42173 D.

Direct-Current, 2400-Volt Locomotives for Butte. Anaconda & Pacific Railway. Illustrated description of locomotives of the articulated double-truck type with all weight on the drivers. 1800 w. Elec Rev & W Elect'n-June 14, 1913. No. 42846.

A 2400-Volt Direct-Current Locomotive; Butte, Anaconda & Pacific Railway. Illustrated description of work of

Locomotives (Electric) MOTOR POWER AND EQUIPMENT Locomotives (Mikado)

the locomotives. 1500 w. Eng News-June 26, 1913. No. 43311.

800-H.P. Locomotives for the Mittenwald Railway (Die 800 PS-Lokomotiven der Mittenwaldbahn). Egon Seefehlner and Franz Popp. Detailed description of these locomotives, covering their construction and electrical equipment. Ills. and Plate. 5500 w. Elek u Masch—May 4, 1913. No. 43037 D.

Coupling Frames and Connecting Gearing as Driving Mediums for Electric Locomotives (Der Kuppelrahmen und verwandte Getriebe als Antriebs-mittel für elektrische Lokomotiven). Herr Kleinow. A study of the wheel couplings on electric locomotives of differing types. Ills. 5600 w. Elek Kraft u Bahnen—June 14, 1913. No. 43545 D.

Motive Equipment of the Departmental Railways of Haute-Vienne (Die Triebwagenausrüstungen der Chemins de Fer départmentaux de la Haute-Vienne). A. Wichert. Territory covered, power production and distribution, and details of locomotive equipment. Ills. 6500 w. locomotive equipment. Ills. 6500 w. Elek Kraft u Bahnen—Aug. 14, 1913. No. 44685 D.

Electric Locomotives for Main Line and Suburban Services. B. Parker Haigh. Read before the Sci. Soc. of the Roy. Tech. College, Glasgow. Deals with matters of design and construction. Ills. 3500 w. Mech Engr—Aug. 29, 1913. Serial, 1st part. No. 45036 A.

Electrical Locomotives of the Lötschberg Railway. Illustrated detailed description of probably the most powerful locomotives yet built. 1500 w. Elec Rev, Lond—Aug. 29, 1913. No. 45028 A.

The Split-Phase Locomotive. E. F. W. Describes and explains Alexanderson. features of control of this novel type of electric locomotive. Ills. 2500 w. Elec Rev—Oct., 1913. No. 45580 C. New Single-Phase Motor and Phase

converter for Locomotive Service. trates and describes an experimental type of articulated locomotive with single-2500 phase commutator motors. Elec Ry Jour-Oct. 11, 1913. No. 45881.

Single-Phase Locomotives for Rhaetian Railway. Illustrates and describes the electric locomotives for this single-phase line in Switzerland. 900 w. Engr, Lond—Oct. 3, 1913. No. 45865 A.

Interurban Electric Locomotives. Gives a comparison of H. Ackerson. characteristics and performance of high and low speed motors and related mat-Ills. 2500 w. Elec Jour-Oct., 1913. No. 46335.

The Selection of Electric Locomotives. L. M. Aspinwall. Considers the characteristics required for different classes of

service. Ills. 2000 w. Elec Jour-Oct. 1913. No. 46327.

New Passenger and Freight Locomotives on the New York, New Haven and Hartford, and Boston and Maine Railways (Neuere Personenzugs- und Güterzugslokomotiven der New York, New Haven and Hartford-Bahn und Boston and Maine-Bahn). R. E. Hellmund. Detailed description of the several new types in the service of these roads. Ills. Serial. 1st part. 7500 w. Elek Kraft u Bahnen
—Sept. 14, 1913. No. 46091 D.
See also Motor Cars, under Motive
Power and Equipment.

Locomotives (Mikado)
Mikado Locomotives for the Chicago,
Rock Island & Pacific Ry. Illustrated description of the essential features. 600 w. Ry & Engng Rev-Nov. 23, 1912. No. 37799.

Large Mikados for the Rock Island. Illustrated description of locomotives of the 2-8-2 type which are proving satisfactory from the standpoint of economy. Am Engr-Nov., 1912. 1000 w. 37304 C.

Mikados for the Burlington. Illustrated description of the 2-8-2 type with Emerson superheaters. 1100 w. Engr-Dec., 1912. No. 38201 C.

Mikado Locomotives for the Burlington. Illustrated description of engines designed for long freight runs. 500 w.

Ry Age Gaz—Nov. 29, 1912. No. 37947.

Mikado Type of Locomotives for the
Woodward Iron Company. Illustrated
description. 800 w. Ry & Loc Engng
—Dec., 1912. No. 38013 C.

Large Mikados for the Lake Shore.
Illustrated description of the heaviest
Mikado type locomotives which are to re-

Mikado type locomotives which are to replace consolidation type locomotives. 2800 Am Engr-May, 1913. No. 41834 C.

Mikado Locomotive for the Lake Shore & Michigan Southern Ry. Illustrated description of engines recently put in service. 1200 w. Ry & Engng Rev—May 10, 1913. No. 41978.

Powerful Mikado for the Lake Shore. Illustrates and describes interesting de-

tails of these heavy engines. 1200 w.
Ry Age Gaz—May 2, 1913. No. 41802.
Mikado Type Locomotive, Philadelphia & Reading Ry. Illustrated description of what is claimed to be the largest Mikado type locomotive yet constructed. 1800 w.

Ry & Engine Payer Lyne 7, 1918. No. Ry & Engng Rev-June 7, 1913. No. 42708.

Powerful Mikado on the Reading. Illustrated description of the largest engine of this type, showing exceptional frame bracing and absence of superheater. 1000 w. Ry Age Gaz (Mech Ed)—Aug., 1913. No. 44261 C.

MOTIVE POWER AND EQUIPMENT Locomotives (Pacific)

Lubrication

Mikado and Pacific Locomotives for the Duluth & Iron Range. Illustrations and particulars of these types. 1500 w. Ry & Loc Engng—Aug., 1913. 44106 C.

See Locomotives (Articulated), under Motive Power and Equipment.

Locomotives (Pacific)

Pacific and Mikado Type Locomotives for the New Orleans, Mobile & Chicago R. R. Illustrates and describes the es-sential features of these new locomotives. 1000 w. Ry & Engng Rev-Dec. 7, 1912. No. 38099.

Pacific and Consolidation Locomotives for the Pere Marquette. Illustrates and describes both types. 700 w. Ry & Loc

Engng—Jan., 1913. No. 38798 C.
Canadian Pacific 4-6-2 Type Locomotive. W. H. Winterrowd. Illustrated detailed description of the standard Pacific type locomotive with enclosed vestibule cab and a combined tender tank and underframe. 1500 w. Am Engr-March, 1913. No. 40339 C.

Pacific Type Locomotives for the Nashville, Chattanooga & St. Louis Ry. Illustrated description of engines of high-powered design for passenger service. 700 w. Ry & Eng'ng Rev—June 21, 1913.

No. 43152.

The Locomotives of the Compagnie P.-L.-M. at the Gand Exposition (Les locomotives de la Compagnie P.-L.-M. à l'exposition de Gand). L Pierre-Guédon. Leading particulars on the Pacific locomotives exhibited. Ills. and Plate. 3000 w. Genie Civil—May 24, 1913. No. 43084 D.

Pacific Type Locomotives for the Baltimore & Ohio R. R. Illustrates and de-

scribes the essential features. 800 w. Ry & Engng Rev—Sept. 20, 1913. No. 45272.
Pacific Type Locomotive for the Pennsylvania Lines West of Pittsburg. Illustrated description of a heavy fast passenger locomotive—the 40,000th locomotive to be built by the Baldwin Works. 1200 w. Ry & Engng Rev-Oct. 4, 1913. No. 45685.

Locomotive Selection

Factors in the Selection of Locomotives in Relation to the Economics of Railway Operation. O. S. Beyer, Jr. Discusses things to be considered in the selection, sizes and types, the relation of operating expenses, and the determination of the most economical locomotive, etc. 8000 w. Jour Am Soc of Mech Engrs-Jan., 1913. No. 39349 D.

Locomotive Superheaters The Locomotive Superheater and Some of Its Effects on the Cost of Railway Operation. Gilbert E. Ryder. Illustrates

and describes the arrangement and explains the savings effected. General discussion. 13800 w. Pro N Y R R Club—Nov. 15, 1912. No. 38623.

The Maintenance and Operation of Superheater Locomotives. Gilbert E. Ryder. Presents the problems in the operation and maintenance of superheater locomo-General discussion. Ills. 15500 w. Pro Ry Club of Pittsburgh—Feb. 28,

1913. No. 41549 C.

Some Effects of Superheating and Feed-Water Heating on Locomotive Working. F. H. Trevithick and P. J. Working. F. H. Treviumes and Cowan. Considers these systems and the value of their economical features, the value of the systems and their practical features. Ills. 12000 w. Inst of Mech Engrs—March 14, 1913. No. 41014 N.

Lubrication of Superheated Locomotives. James Spelten. Explains conditions and their causes, as observed by the writer. 1500 w. Ry & Loc Engng—April, 1913. No. 41032 C.

The North-Eastern Railways Stumpf Locomotive. Illustrated description of the six-wheel coupled express goods locomotive recently placed in service. w. Engr, Lond—April 18, 1913. 41777 A.

See Superheating, under MECHANICAL Engineering, Steam Engineering.

Locomotive Testing

Progress in Testing Full-Size The Pieces Under Practical Conditions, Together with Locomotive Testing in the United States. Gaetano Lanza. Outlines the progress made and the present status of such tests. Ills. 7500 w. Jour Fr Inst—Dec., 1912. No. 38394 D.

See Laboratory, under MECHANICAL Engineering, Measurement.

Locomotive Valves

The Measurement of the Steam Discharge from Locomotive Pop Safety Valves. Discusses the tests carried out by Edward F. Miller, Prof. of Steam Engng. at the Mass. Inst. of Tech., conducted on Crosby muffled pop locomotive safety valves and every precaution taken to secure accuracy. 1200 w. Engng—Jan. 17, 1913. No. 39479 A.

New York Triple Valves. Illustrates

Illustrates and describes triples of the K type for freight service. 2000 w. Ry & Loc Engng—Jan., 1913. No. 38797 C. Maintenance of Piston Valves. Illus-

trates and describes methods used in machining packing rings and bushings on the Eastern Ry. of France. 2500 w. Am Engr-Dec., 1912. No. 38204 C. Lubrication

Locomotive Lubrication. W. W. Lemen Discusses lubricants and their applica-

Mechanical Stokers

MOTIVE POWER AND EQUIPMENT

Multiple-Unit

tion and related topics. 8500 w. Ry Mas Mech-Feb., 1913. No. 39924 C.

Mechanical Stokers

Mechanical Stokers from Operating Standpoint. Reports heavy trains successfully operated on four large roads by locomotives equipped with these machines. 2500 w. Ry Age Gaz-June 13, 1913. No. 42815.

Mine Locomotives

See same heading, under MINING AND METALLURGY, Mining.

Motor Cars

New Benzol - Electric Motor Cars (Neuere benzolelektrische Triebwagen). W. Wechmann. Describes motor equipment and electric installations for these cars. Ills. 2600 w. Elek Kraft u Bahnen

Oct. 24, 1912. No. 37468 D.

Petrol-Electric Motor Cars, H. Pieper

System (Automotrices pétroléo-électri-ques, système H. Pieper). Marcel Hegelbacher. Detailed description of this type of railway motor car. Ills. and plate. 2600 w. Génie Civil-Jan. 11, 1913. No.

39091 D.

The History of the Railway Motor Car (Die Geschichte der Eisenbahntrieb-wagen). C. Guillery. Recording the wagen). C. Guillery. stages of development to the present time. Ills. 3600 w. Mitt d Ver f d Förd des Lokal u Strassenbahnwesens---Mar., 1913. No. 41471 F.

Motor Cars in the Service of the Prussian-Hessian Railways (Die Triebwagen der preussisch-hessischen). Herr Usyand. The Dienst Staatsbahnen). value, in general, of electric motor cars, and the construction characteristics of the types used on this system. Serial, 1st part. 6000 w. Elek Kraft u Bahnen— May 4, 1913. No. 42159 D. A British Gasoline-Electric Motor Car.

Illustrated description of the Thomas Transmission gasoline-electric car which has been running on the South African Railways with satisfactory results. 1800 w. Ry & Engng Rev—May 31, 1913. No.

42578.

Railroading Without Steam. Don Cameron Shafer. Illustrated description of self-contained cars and notes on the change in transportation methods. 1200

Cassier's—June, 1913. No. 42865 B. Self-Propelled Cars. S. T. Dodd and before the Int. Ry. Fuel Association. The discussion is confined largely to the heavier types of independent cars. 4500 w. Ry Age Gaz (Mech Ed)—June, 1913. No. 42685 C. B. H. Arnold. Abstract of a paper read

Self-Propelled Railway Passenger Cars. S. T. Dodd. Illustrates and describes various types of cars, comparing the characteristics of the mechanical drive gasolene car and the electric-drive gasolene car, and the operating costs. 5000 w. Gen Elec Rev—Sept., 1913. No. 5000 44831 C.

Shunt-Wound Motor Cars and Their Use on Mountain Lines (Nebenschluss-trieb-wagen und ihre Verwendung auf Gebirgsstrecken). Herr Reutener. De-scribes these cars and their service on some German roads. Ills. 3300 w. Elek Kraft u Bahnen—May 14, 1913. No. 43047 D.

Motor Cars for Maintenance of Way Forces. A study of the service of over satisfaction where properly used. Table and editorial. 5000 w. Ry Age Gaz—July 18, 1918. No. 43799.

The Possibilities of Motor Vehicles for Railway Purposes from the Operator's Standpoint. J. Pepper. Discussion of the economical collection and delivery of goods, and the cost of operating different types of motor vehicles. 9500 w. Ry Age Gaz, Lond—July 4, 1913. No. 43708 A.

Petrol-Electric Motor Cars (Automotrices Pétroléo-Electriques). M. Damoiseau. General descriptions of the many different systems and types of self-propelled tram cars in France. Ills. 14000 w. Bul Soc Int d Electriciens-May, 1913. No. 43567 F.

Motor Car Troubles, Their Symptoms, Causes and Remedies. Notes from an instruction book recently issued by the Union Pacific. 1800 w. Ry Age Gaz—Aug. 15, 1913. No. 44409.

Petrol-Hydraulic Railway Motor Coach. Illustrated description of a motor coach built for service in Canada in which the Hele-Shaw hydraulic power transmission system has been combined with an internal combustion engine. 1200 w. Engr, Lond—Aug. 8, 1913. No. 44465 A.

The Dracar. Illustrated description of a self-propelled passenger car using a gasolene engine to drive an electric generator as a prime mover, with the electrical energy transmitted to motors geared to the axles. 800 w. Ry & Loc Engng—Oct., 1913. No. 45597 C.

Benzol Electric Train for the Khedive of Egypt. Illustrated description of a train composed of two motor coaches, each equipped with a benzol electric set. 1000 w. Engr, Lond—Sept. 5, 1913. No. 45158 A.

Multiple-Unit

The New Multiple-Unit Rolling Stock of the Ouest-Etat Railway. Illustrated description of new rolling stock. 2200 w. Elect'n, Lond-June 6, 1913. No. 42881 A.

Shops

Official Records

Forms for Locomotive Operation and Cost. A. V. Heckman. Describes a system of records that give a true index of shop and roundhouse conditions. 4000 w. Am Engr-March, 1913. No. 40341 C. Oil Engines

The Oil Engine in Railway Water Service. C. R. Knowles. Considers types at engines used for this service, their care, economy, etc. 2000 w. Ry Age Gaz-Aug. 15, 1913. No. 44406.

Passenger Cars

The Construction of Iron Passenger Cars on Railways in the United States of F. Gutbrod. America. Gives reasons for their adoption, their history, comparing with existing cars, etc. Ills. 9500 w. Bul Int Ry Cong—Nov., 1912. Serial. 1st part. No. 37708 G.

Steel Passenger Cars. A. Copony. Read before the Can. Ry. Club. Discusses their construction, maintenance, cost and weight, insulation, inside finish, etc. 9000 w. Ry Mas Mech-Nov., 1912. No.

37342 C

The New Cars for the Bona-Guelma and Extension Railway (Les Nouvelles Voitures de la Cie de Bône-Guelma et prolongements). M. Felix. Describes type of construction, and 1st, 2nd and 3rd class compartment arrangements. Ills. and plates. 1200 w. Rev Gen des Chemins de Fer—Sept., 1912. No. 37492 G.

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Transportation of Fruit and Vegetables. E. D. Levy. Abstract of an address before the Western Fruit Jobbers' Assn. Discusses the service and the need for co-operation between shipper and carrier. 5000 w. Ry Age Gaz-Feb. 7, 1913. No 39712.

Relief Trains

The Relief Trains of the Baden State Railway. Mr. Courtin. Describes in detail this recently introduced feature. Ills. 5000 w. Bul Int Ry Cong-May, 1913. No. 42262 G.

Repair

The Repair and Maintenance of Railway Motive Power from Practical Experience (Ueber Instandsetzung und Unterhaltung der Eisenbahn-Betriebsmittel nach in der Praxis gemachten Erfahrungen). A. Diekmann. Maintains that

long life depends upon: solid construction; manipulation, and careful study and repair by experienced men in the shop. Gläser's Ann—May 15, 1913. No. 43018 D.

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System as Applied to Shop Repairs to Locomotives. A. H. Kendall. A résumé of the system in use at the Angus shops of the Canadian Pacific. 5000 w. Mas Mech-Sept., 1913. No. 45239 C. Safety Valves

Location of Steam Gages in Setting Safety Valves. C. T. Rommel. Gives results obtained from tests. 1800 w. Ry Age Gaz (Mech Ed)—Oct., 1913. No. 45667 C.

Shop Practice

Setting Eccentrics Upon Locomotive Crankshafts. Describes a practical workshop method of setting out the eccentric sheaves upon the crankshaft. Ills. 1000 Mech Wld-Dec. 27, 1912. 38885 A.

Methods in a Railroad Shop in Utah. F. A. Stanley. Illustrates and describes economical methods made possible by special tools. 1500 w. Am Mach-Jan. 9, 1913. No. 38943.

Shops

Building Large Locomotives. trated description of the large erecting shop at Eddystone, Pa. 1500 w. Ry Age Gaz—Nov. 8, 1912. No. 37332.

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Calgary Shops, Canadian Pacific Ry. Illustrated description of this large plant of interest because of its size and the speed with which it was erected. 4500 w. Ry Mas Mech—June, 1913. No. 42854 C.

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Determining the Type of Erecting Shop for Locomotive Repair Shops. P. L. Bat-Considers the organization more important than the type of shop. Differ-

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Smoke

ent authors discuss the good and bad features of various types. Ills. 7500 w. Ry Mas Mech—June, 1913. No. 42852 C.

Locomotive Repair Shops. F. F. An analysis and discussion of Gaines. the more important items relative to the construction and operation of repair shops. Ills. 3000 w. Ry Mas Mech—

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The New Workshops of the Semarang-Cheribon Steam Railway Company (De werkplaatsen der Semarangnieuwe Maatschappij). Cheribon Stoomtram J. H. Müller. Description of the equipment of this shop in Java. Ills. 3800 w. De Ingenieur—June 21, 1913. No. 43549 D.

Brighton Works of the London, Brighton and South Coast Ry. Hugh G. Boutell. Impressions from a recent visit to these shops. Illustrations of two locomotives. 1800 w. Ry & Loc Engng—Aug., 1913. No. 44105 C.

Jeffery Shops of the Western Pacific W. E. Johnston. Illustrated description of new shops at Sacramento, Cal., and their equipment. 3000 w. Ry Mas Mech -Sept., 1913. No. 45237 C.

The Manufacture of Rolling Stock in Australia. Brief account of the works of the Clyde Engng. Co., near Sydney, N. S. W. 1300 w. Engr, Lond—Sept. 12, 1913. No. 45405 A.

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The Abatement of Locomotive Smoke. D. F. Crawford. (Abstract.) Considers briefly the available methods for the abatement of smoke, and results obtained. 3000 w. Ry Age Gaz-Oct. 24, 1913. No. 46197.

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Chicago Terminals and the Smoke Problem. R. E. Pierce. A defense of the Terminals and the Smoke Chicago railroads against the demand for compulsory electrification of the railway terminals within the city, delivered in the Fuertes Memorial Prize-Speaking Contest, at Cornell Univ., April 18, 1913. 2000 w. Ry & Engng Rev—May 10, 2000 w. Ry & 1913. No. 41979.

The Railroad Man's Side of the Smoke Abatement Problem. G. M. Carpenter. Address before the Cincinnati Ry. Club. Shows that the same laws cannot be enforced in locomotive practice that are enforced in stationary practice. 3300 w. Ind Wld—May 12, 1913. No. 41967.

Smoke-Washers for Roundhouses. Drawings and description of a plant in Chicago, for washing the smoke dis-charged from locomotives in the engine house. 700 w. 1913. No. 42093. 700 w. Eng News-May 15,

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CHANICAL ENGINEERING, Steam Engineering.

Snow Plows

Rotary Snow Plows. Notes from a paper by H. H. Vaughan, before the Can. Soc. of Civ. Engrs. Illustrates and briefly describes the development from the earliest type to the latest Canadian Pacific design. 1200 w. Eng Rec—Jan. 11, 1913. No. 38954.

Steam Consumption

The Steam Consumption of Locomotive Engines from the Indicator Diagrams. J. Paul Clayton. Develops and illustrates the application of the logarithmic diagram to locomotive engines. Univ of Ill, Bul 65-Jan 20, 1913. No. 42901 N.

Steel Cars

Steel Passenger Car Design. Papers and discussion presented at a meeting held in New York, April 8, 1913, conducted by the Sub-Committee on Railroads of the Committee on Meetings, the New York Local Committee cooperating. 13 papers by different authors. 21000 w. Jour Am Soc of Mech Engrs-May, 1913. No. 42409 D.

Interior Finish of All-Steel Coaches. Shows the reduction in weight from using steel instead of wood, and other advant-

ages. Ills. 1500 w. Ry Gaz, Lond—May 23, 1913. No. 42747 A.
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The Standard Locomotive Stoker. lustrated description of a new stoker, the prominent features being absence of apparatus in the cab and noiseless operation. 1200 w. Ry Age Gaz-Oct. 10, 1913. No. 45773.

Stores

Regulation of the Stock of Material. George G. Yeomans. Discusses the relation of accounting to this problem. The form of such accounts and ends to be served. 2200 w. Ry Age Gaz—April 4, 1913. No. 41071.

Superheaters

Stirling's Superheater for Locomotive Boilers. Illustrated description of a new design and statement of advantages claimed for it. 1500 w. Mech Engr— July 18, 1913. No. 43957 A. Duchesne's Experiments on Super-

heat. R. C. H. Heck. A critical examination of Duchesne's results and methods. Power—July 22, 1913. No. 43843.

See also Locomotives, under Motive Power and Equipment.

Valve Gears

Superheating

Increase in Locomotive Capacity by the Use of Highly Superheated Steam. Gilbert E. Ryder. Claims that the superheated locomotive gives an increase in hauling capacity, a saving in fuel, and a reduction in cost of transportation. Discussion. 15500 w. Pro W Ry Club—Jan. 21, 1913. No. 40398 C.

Superheater Locomotives. P. C. Linck. Read before the Gen. Foremen's Assn. Suggestions for maintaining superheater locomotives for successful operation.
Short discussion. 1500 w. Ry Age Gaz
(Mech Ed)—Aug., 1913. No. 44262 C.
Tests of Superheater Locomotives. C.

H. Benjamin and L. E. Endsley. Reports tests at Purdue University, describing methods and discussing results. 3500 w. Ry Mas Mech-Aug., 1913. No. 44469 C.

Tires

Wear of Driving-Wheel Tires. torial discussion of various contributing causes. 1000 w. Ry & Loc Engng-Nov., 1912. No. 37240 C.

Chrome-Vanadium Driving Wheel Tires. Reports service obtained, and gives specifications. Ills.
—Dec. 20, 1912. 2000 w. Ry Age Gaz No. 38346.

See also same heading, under STREET AND ELECTRIC RAILWAYS.

Tractive Effort

Locomotive Tractive Effort. H. A. Gives the development of a formula which includes allowances for the limits to the physical strength of the fireman. 2000 w. Ry Age Gaz—Sept. 12, 1913. No. 45078.

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The Schneider Locotractor (Le Locotracteur Schneider & Cie.) E. Brillié. Description of a new internal combustion engine designed for heavy duty in rail-way motive work. Ills. 10,000 w. Mem Soc Ing Civ de France-April, 1913. No. 43079 G.

Schneider & Co. Locomotive; 70-Horsepower, Internal-Combustion Motor with Aerothermic Transmission, on the Hautier System (Locomotive Schneider et Cie., de 70 chevaux à moteur à explosion et transmission aérothermique, système Hautier). L. Pierre-Guédon. A new type of tractor fitted for railway locomotive purposes. Ills. 4800 w. Genie Civil—May 31, 1913. No. 43086 D.

Train Lighting A New Dynamo for Train Lighting. Illustrated description of the machine and the principle on which it works. 2000 w. Engr. Lond-June 6, 1913. No. 42894 A.

Train Resistance

Characteristic Dynamical Diagrams for the Motion of a Train During the

Accelerating and Retarding Periods. E. Dalby. Considers a method of reducing data obtained from a dynamometercar record in order to obtain information regarding vehicle and engine resistance, and related subjects. 9500 w. Inst of Mech Engrs—Oct. 25, 1912. No. 37397 N.

The Temperature Effect on Train Resistance. Refers to an investigation by E. C. Schmidt and F. W. Marquis and the conclusions. 2000 w. Engng—Jan.

10, 1913. No. 39258 A.

Starting Resistance of Railway Rolling Stock (Der Bewegungswiderstand von Eisenbahnfahrzeugen zu Beginn des An-fahrens) H. v. Glinski. Results of dynamometer tests on trains of varying loads. 2700 w. Zeitschr des Ver deutscher Ing -Dec. 21, 1912. No. 39040 D.

Transfer Trucks

Electric Transfer Trucks for Railways Les chariots-transbordeurs électriques dans les chemins de fer). A. Frémeaux. The general advantages of these trucks for freight transfer, their construction and electrical equipment. Ills. Serial, 1st part. 3600 w. Tech Mod—June 1, 1918. No. 43072 D.

Triple Valves.

Will Triple Valves Operate as Intended? Abstract of a paper by S. W. Dudley, read before the Air Brake Assn. Considers the effect of different sizes of brake pipe, main reservoir pressures, com-Gaz (Mech Ed) — June, 1913. No. 42684 C.

Valve Gears

The Baker Locomotive Valve Gear. R. S. Mounce. Illustrated description of the gear with an analysis of its motions and the methods of setting valves, to obtain best results. 2200 w. Am Engr-Nov., 1912. No. 37306 C.

The Baker Valve Gear. Discusses possible breakdowns. Ills. 1100 w. Ry & Loc Engng—April, 1913. No. 41029 C.

Valve Gear of Six-Coupled Bogie Express Locomotive for the Great Central Railway. Illustrated description of an interesting example of British locomotive practice. 2 plates. 500 w. Engng—Feb. 28, 1913. No. 40487 A. Balances for Piston Slide Valves (Ent-

lastung für Kolbenschieber). Friedr. Becher. A study of locomotive valves and their fittings. Ills. 3300 w. Zeit des Ver deutscher Ing—Feb. 1, 1913. 40534 D.

A Locomotive Valve Gear. C. F. Dendy Marshall. Illustrates and describes the author's invention of a valve gear for railway engines. 2500 w. Engr, Lond-June 20, 1913. No. 43392 A.

Valve Tests

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A., T. & S. F. Ry.

Walschaerts Valve Gear. C. D. George. A critical discussion of recent articles describing the construction and operation. Ills. 2000 w. Ry & Loc Engng—Aug., 1913. No. 44104 C.

See also Locomotives, under Motive

Power and Equipment.

Valve Tests

Triple Valve Tests. Explains why these tests are so necessary. 1500 w. Ry & Loc Engng—Aug., 1913. No. 44107 C.

A Collapsible Platform and Vestibule. Illustrates and describes an interesting innovation in construction, especially for the protection of the ends of the car body in collisions. 600 w. Ry Age Gaz —Jan. 24, 1913. No. 39399.

Wheels

The Manufacture of Chilled Iron Car Wheels. Dr. Frederick C. Weber. Information concerning a new titanium-boron ferro-alloy and an apparatus for testing car wheels. 2500 w. Met & Chem Engng—Feb., 1913. No. 39687 C. How to Locate Defective Wheels. Ex-

tracts from a pamphlet issued by the Illinois Central R. R. on defects at the railway shop and defects on the road. Ills. 3500 w. Ry Mas Mech—April, 1913. No. 41570 C.

The Case of the Chilled Cast Iron Car

Wheel. George W. Lyndon. The manufacturers consider that the percentage of flange breaks is small considering the

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The Chilled Iron Car Wheel. A. A. Hale. Extract from a paper read before the New England R. R. Club. Reviews the history of the development, and the problems of the present time relating to the use of wheels. 3500 w. Ry & Engrey

problems of the present time relating to the use of wheels. 3500 w. Ry & Engng Rev—Aug. 2, 1913. No. 44149.

Study of 'Car Wheel Flanges and Treads. L. W. Wallace. An analysis of the results of the truck tests, made for the Am. Steel Foundries, from the standpoint of the wheels. Ills. 3000 w. Ry Age Gaz (Mech Ed)—Sept., 1913. No. 44957 C.

The Future of the Chilled Car Wheel. P. H. Griffin. Discusses the possibilities of the chilled wheel in 50-ton car service, showing that chilled wheels can be made of qualities of iron and methods of manufacture as will give efficient and safe service. 5000 w. Bul Am Inst of Min Engrs—Oct., 1913. No. 46356 F.

Wheel Tests

Drop Test of Heat Treated Chrome Vanadium Wheels. Describes severe tests made, stating results. 900 w. Ry Age Gaz—Sept. 26, 1913. No. 45449.

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Africa

The Construction of a West African Railway. G. M. Harriss. Abstract from a paper read before the Inst. of Civ. a paper read before the inst. of Civ. Engrs. of Ireland. Gives details of the Accra-Akwapim Ry. construction. 4500 w. Can Engr—Dec. 5, 1912. No. 38089.

The Northern Railway of Cameroon. Illustrations and brief description of a difficult took for the optimization.

difficult task for the engineer in the German Colonies of Africa. 900 w. Sci Am Sup—Feb. 8, 1913. No. 39724.

Alaska

Report of the Alaska Railroad Commission. Information from the recently issued report of the Commission, describing the present railway facilities of Alaska, and reprinting the summary and recommendations. Map. 5500 w. Eng News—March 20, 1913. No. 40739.

Railway Routes in Alaska. Report of the Alaska Railroad Commission. and Charts. 172 pp. House of Representatives—Doc. 1346. No. 42482 N. Proposed Government Ownership in

Alaska. Editorial criticism of the proposal. 2500 w. Ry Age Gaz—May 23, 1913. No. 42354.

Alaska's Need of Railway Development.

Shows the inadequacy E. E. Swergal. of the existing lines and proposed improvements to open up the natural wealth of the region. 3000 w. Ry Age Gaz-Sept. 5, 1913. No. 44982.

Algeria

The Oran State System (Le réseau Oranais de l'État). P. Caufourier. Description of existing railways, lines under construction, and the proposals for ultimate connections in interior Africa. Ills., maps and plate. 4200 w. Genie Civil—Sept. 6, 1913. No. 45357 D.

Alpine Railway
The Lötschberg or Bernese Alpine Railway. Dr. Alfred Gradenwitz. Brief illustrated description of a picturesque railway line connecting Lake Thun with the Simplon tunnel. 1200 w. Sci Am-

May 17, 1913. No. 42098.

A New Alpine Railway. Brief illustrated description of the new Lötschberg railway in Switzerland. The electric locomotives used are the most powerful a. c. locomotives in the world. 1000 w. Sci Am Sup-May 17, 1913. No. 42201.

A., T. & S. F. Ry, Grade Revision and Double-Tracking on the A., T. & S. F. Ry. J. G. Van

D., L. & W. R. R.

Zandt. Maps and description of recent improvements. 2500 w. Ry & Engng Rev—Dec. 21, 1912. No. 38382.

Austria

The Mariazell Railway (Le Chemin de fer Mariazell). R. Kratochwil. General description of this 91 kilometer mountain railway in Austro-Hungary, covering construction, embankment, cut, tunnel and bridge; rolling stock, steam and electric locomotives, and cars; and overhead electric structures. Ills. 4000 w. Rev gen des Chemins de Fer—Apr., 1913. No. 41518 G.

41518 G.
The Mittenwald Railway (Die Mittenwaldbahn). Egon E. Seefehlner. An account of the progress in electrification between Innsbrück and Munich in the Tyrol. Maps. Serial, 1st part. 3300 w. Elek Kraft u Bahnen—Feb. 24, 1913. No.

40567 D.

Bagdad Railway

The Bagdad Railway. Harold J. Shepstone. Illustrated account of the construction of this railway now in progress. 2000 w. Sci Am—Nov. 23, 1912. No. 37734.

Boston & Maine

Boston & Maine Extension from Hinsdale, N. H., to Brattleboro, Vt. Describes the construction of a new line, seven miles long, to avoid using the tracks of the Central Vermont. Ills. 1500 w. Ry Age Gaz—Oct. 10, 1913. No. 45777.

Canada

Three Transcontinental Railways for Canada. Illustrated account of the Grand Trunk Ry., the Canadian Pacific, and the Canadian Northern systems. 3800 w. Con Rec—June 18, 1913. No. 42972.

Canadian Ry.

The Canadian Northern Ry. Henry K. Wicksteed. Maps and description of a new Canadian transcontinental railway; describes survey and exploration work through a difficult region. 4000 w. Eng News—July 10, 1913. No. 43676.

C. C. & O.

The Elkhorn Railway Extension. O.

The Elkhorn Railway Extension. O. K. Morgan. Illustrated description of the characteristics of the line and the heavy construction work. 2500 w. Eng News—Oct. 16, 1913. No. 45934.

China

Rebuilt Antung-Mukden Ry., China. J. L. Dobbins. Reviews the history of the line and the work involved in its reconstruction. Ills. 4500 w. Eng News— Oct. 31, 1912. No. 37209. The French Yunnan Railway. Illus-

The French Yunnan Railway. Illustrates and describes details of the line, and the difficulties encountered in its construction, with information as to the financial and commercial results. 3300

w. Engng—Jan. 3, 1913. No. 39155 A.
The Canton-Kowloon Railway. Abstracts of two papers read before the Inst. of Civ. Engrs. The first paper gives a description of the general construction and equipment, by Frank Grove and an account of the two largest bridges by Basil Tanfield Beridge Boothby. The second paper by Graves William Eves, gives statement of costs. 3000 w. Engng—Jan. 31, 1913. No. 39807 A.

The Kiangsu-Chekiang Railways. Lewis R. Freeman. Progress in China toward a modern system of railways. Ills. 2500 w. Ry Age Gaz—March 14, 1913. No.

40659.

Railway Concessions and Contracts in China. An explanation of past and present conditions affecting railway building, with a translation of the mandate of the provisional president, referring to the General Ry. Co. of the Republic of China. 2000 w. Engr, Lond—May 2, 1913. No. 42007 A.

C. M. & St. P.

Important Improvement Work on C. M. & St. P. Map and illustrated description of second track and grade revision between Aberdeen, S. D., and Montevidio, Minn. 2000 w. Ry Age Gaz—March 21, 1913. No. 40745.

Construction of the Lewistown-Great Falls Line of the C. M. & St. P. Ry. Illustrated description of the building of an important branch line. 2500 w. Ry & Engng Rev — June 28, 1913. No. 43357.

Cut-Off

A General Description of the Deleware, Lackawanna & Western Railroad Cut-off in New Jersey. Arthur L. Willgoose. Describes the work, the route, the advantages, etc, Ills. 2500 w. Cornell Civ Engr—June, 1913. No. 43186 C.

D., L. & W. Ry.

The Hopatcong-Slateford Cut-Off. C. W. Simpson. Illustrated description of this recently completed line of the D. L. & W. Ry., which embraces some of the heaviest work in this country. 3500 w. Ry Age Gaz—Dec. 6, 1912. No. 38069

Ry Age Gaz—Dec. 6, 1912. No. 38069. New D., L. & W. Line North of Scranton, Pa. Describes improvements being made in grade, and alinement from Clark's Summit to Hallstead. Ills. 1500 w. Ry Age Gaz—April 25, 1913. No. 41639.

The Nicholson Relocating of the Lackawanna Railroad. G. J. Ray. Explains the characteristics of new and old alinement and principal considerations for change. 1500 w. Eng Rec—April 26, 1913. No. 41539.

The Summit Cut-off of the Lacka-

East Africa

NEW PROJECTS

Louisville & Nashville

wanna Railroad. Describes the relocation of the D. L. & W. R. R., west of Scranton, Penn.; 41 miles of new construction, including unusually heavy grading. Ills. 7000 w. Eng News—Aug. 28, 1913. No. 44884.

East Africa

The Construction of the East African Inland Railway (Vom Bau der ostafri-kanischen Mittellandbahn). C. Gilman. Maps and construction notes of line from Dar-es-Salem to Tabora, in German East Africa. Ills. Serial, 1st part. 1800 w. Bau—Sept. 20, 1913. Schweiz 46033 D.

Egypt

Light Railway Construction in Egypt. Brief illustrated account of work in progress. 400 w. Ry Gaz, Lond—May 23, 1913. No. 42746 A.

E. P. & S. W.

Fairbanks-Tucson Extension of E. P. & S. W. Map, illustrations and description of this new line and its structures. 800 w. Ry Age Gaz—Nov. 29, 1912. No. 37945.

Erio

Double-Tracking the Erie. Brief illustrated account of extensive reconstruction work, embracing 260 miles of second and third track on lines west of 1000 w. Ry & Loc Salamanca, N. Y. Engng-May, 1913. No. 41841 C. Grand Trunk

The Proposed Extension of the Grand Trunk Railway System in New England. Maps and explanation of the work which the Grand Trunk Co. had under way and projected. 1000 w. Eng News-Jan. 30, 1913. No. 39592.

Hamilton, Ont.

The Railway Situation in Hamilton.
E. H. Darling. Gives map of the city, explaining its peculiar location and the proposed route of the Canadian Northern Ry., with changes contemplated. 2500 w. Can Engr—Sept. 4, 1913. No. 44960.

Himalayan Line

Features of the Kalka-Simla Railway. Lewis R. Freeman. An account of a 60-mile line in India in which heavy protective work was necessary, resulting in high construction cost. Ills. 1000 w. Ry Age Gaz-Oct. 10, 1913. No. 45775.

Himalayas

The Darjeeling Himalayan Railway. Lewis R. Freeman. Illustrates and describes many difficulties overcome in constructing this two-foot gage line which climbs the Himalayas on a 4% grade. 1200 w. Ry Age Gaz—Aug. 22, 1913. No. 44538.

Hudson Bay Project

Concerning the Hudson Bay Route.

William Batten McPherson. Detailed discussion of the project for opening a new outlet for Canadian products, concluding that the route is commercially feasible. 4000 w. Ap Sci-Feb., 1913. No. 40386 C.

Idaho-Northern

Construction Work on the Idaho Northern Ry. J. H. Smith. Describes features of an extension of 103 miles from Emmett north to Big Payette Lake, with terminus at McCall, Idaho. 2500 w. Eng News-July 17, 1913. No. 43835.

Ireland

An Irish Channel Railway. Grattan Tyrrell. Discusses reasons why freland has not enjoyed equal prosperity with other parts of the United Kingdom, and considers methods of establishing a railway across the channel. 1800 w. Pop Sci M—Oct., 1913. No. 46100 C.

The Camonica Valley Railways (Le Ferrovie della Valle Camonica). O. Raineri Tenti. Detailed description of the Iseo-Breno-Edolo and other lines in the province of Brescia, Northern Italy. Ills. and Maps. Serial. 1st part. ing Ferro—Jan. 15, 1913. No. 40620 E.

The Belluno-Cadore Railway (Ferroria Belluno-Cadore). A. Agostini. Details of construction of this new railway in the Venetian Alps of Northern Italy. Ills. Serial. 1st part. 2800 w. Ingeg Ferro—Mar. 31, 1913. No. 41537 D.

K. C. Southern

Kansas City Southern Railway. Map and illustrated description of this shortest line from Kansas City to the Gulf of Mexico, and the country through which it passes. 3000 w. Mfrs' Rec—March 27, 1913. (Special.) No. 41564 N.

Long Island R. R.

Long Island Improvements at Jamaica. Illustrates and describes the elevation of tracks, including the separation of railway grades at three points, and a new station and office building. 3500 w. Ry Age Gaz—Aug. 1, 1913. No. 44115.

Louisville & Nashville

Extension Improvements on the L. & N. Illustrates and describes interesting features of the bridge, tunnel and grading work now under way between Nashville and Birmingham. 6000 w. Ry Age Gaz—July 25, 1913. No. 43923.

Extensive Improvements on the L. & N. Illustrates and describes interesting features of the bridge, tunnel and grading work now under way between Paris, Ky., and Jackson. 1800 w. Ry Age Gaz —Aug. 8, 1913. No. 44258.

Milwaukee

PERMANENT WAY AND BUILDINGS

Accidents

New Cutoff Between Winchester and Irvine in Eastern Kentucky. Illustrated description of work on the L. & N. Ry., including heavy grading and high viaducts. 3500 w. Eng Rec—Sept. 6, 1913. No. 44997.

Continuation of Louisville and Nashville Improvements in Eastern Kentucky. Illustrates and describes features of reconstruction and new construction. 1800 Eng Rec-Sept. 27, 1913. 45480.

Milwaukee

The St. Paul Improvements at Milwaukee. Describes a new terminal and hump yard costing \$750,000 which will relieve congestion. 2000 w. Ry Age relieve congestion. Gaz—July 4. 1913. No. 43478.

Mittenwald

The Mittenwald Railway. Brief illustrated description of a 15,000-volt, singlephase railway with a 50,000-volt transmission system from hydroelectric stain the Austro-Bavarian Tyrol mountain region. 1200 w. Elec Ry Jour-July 5, 1913. No. 43465.

New York Central
New York Central Improvement at
Rome. Emile Low. Describes changes made necessary by construction of the Barge Canal, involving street and stream crossings and a new station. Ills. 1500 w. Ry Age Gaz—Aug. 15, 1913. No. 44404.

Norfolk Southern

New Extension of the Norfolk Southern. Map and illustrated description of the consolidation of three short roads west of Raleigh, N. C., and the construction of a new line to Charlotte. 2500 w. Ry Age Gaz-June 13, 1913. No. 42816.

Pennsylvania R. R.

Six-Tracking a Heavy-Traffic Line and Elevating for Grade-Crossing Elimina-tion. Illustrates and describes improvements on the Pennsylvania R. R. at Rahway, N. J. 3500 w. Eng Rec—Dec. 28, 1912. No. 38577.

Southern Railroads

Immediate Task of Railroad Systems of the South. Samuel G. Wilmer. Reviews possibilities of development and work needed before the opening of the Panama Canal, describing recent improvements. 4500 w. Mfrs' Rec—March 27, 1913. (Special.) No. 41555 N.

Switzerland

The Ebnat-Nesslau Railway (Die Bahnlinie Ebnat-Nesslau). A. Acatos. An outline of the topographical conditions, bridges and embankments on this new road. Ills. and maps. Serial, 1st part. 2000 w. Schweiz Bau—Feb. 1, 1913. No. 40528 D.

The Railway of the Bernese Alps (Le Chemin de Fer des Alpes Bernoises). Ch. Dantin. Illustrated description of the newly completed Berne-Loetschberg-Simplon railway. Plate. 6400 w. Genie Civil—July 5, 1913. No. 43578 D. Notes on European Electric Railways.

Louis Bell. Impressions gained during a recent trip over the New Lötschberg Ry. in Switzerland and the older Lecco-Colico line in northern Italy. Ills. 2000 w. Elec Ry Jour—Sept. 6, 1913. No. 45002.

The Bernese Alps Railway and the Lötschberg Tunnel (Le Chemin de fer des Alpes bernoises et le Tunnel du Lötschberg). J. Moret. General description of the line and details of the tunnel construction. Ills. 3600 w. Tech Mod—Aug. 1, 1913. No. 45334 D. See also Tunnels, under Permanent

Way and Buildings. Trono Railway

The Trono Railway. Raymond Ashton. Interesting account of a short desert railway to be constructed in California, to reach the vast potash and borax deposits at Searles lake. Ills. 1800 w. W Engng -Aug., 1913. No. 44387 C.

Tunnel Railway

A Parcels Post Tunnel Railway. lustrated description of a system constructed for demonstration purposes. 1500 w. Sci Am-Jan. 4, 1913. 38775.

West Africa

The Railway Systems of West Africa. H. O. Mance. Considers the objects of railway construction, the location, the French railways, German, and existing railways, the scheme of development, etc. Discussion. Maps. 11000 w. Jour Roy U S Inst—Feb., 1913. No. 40392 N.

West Virginia

Construction of the Buckhannon & Northern Railroad. R. E. Kerr. Illustrated account of this line in northern West Virginia, built especially to develop coal lands. 1800 w. Ry Age Gaz-Oct. 3, 1913. No. 45663.

PERMANENT WAYS AND BUILDINGS

Accidents

Accidents in Shops and Engine Houses. George Bradshaw. Address before the Co-operative Safety Congress at Milwaukee. Discusses causes of injuries. 8000 w. Am Engr-Nov., 1912. No. 37307 C.

Avalanche Construction PERMANENT WAY AND BUILDINGS

Avalanche Construction

Avalanche Construction on the Bernese Alps Railway at Bern, Lötschberg and Simplon (Die Lawinenverbauungen der Berner Alpenbahn Bern-Lötschberg-Sim-K. Imhoff. Describes the explon). tremely heavy constructions required on this road, together with the great precautions taken to prevent slides. Ills. and maps. Serial. 1st part. 3200 w. Zeit des Oest Ing u Arch Vereines—Dec. 20, 1912. No. 39049 D.

Keeping Stone Ballast Clean. C. E. Considers the necessity of protecting it from dirt and cinders, and an effective method of screening ballast on renewal. 1800 w. Ry Age Gaz-Dec. 20, 1912. No. 38348.

Report of Committee II.—On Ballast. Report on proper depth, physical tests of stone for ballast, methods of grading, cleaning stone ballast, etc. Ills. 6000 w. Bul Am Ry Engng Assn—Feb., 1913. No. 40403 N.

Buffer

Test of a Hydraulic Buffer. Carl Describes the methods used Schwartz. to determine the performance of an experimental hydraulic buffer for railroad terminal stations and the results. Ills. 1200 w. Jour Am Soc of Mech Engrs-June, 1913. No. 42952 D.

Buildings Report of Committee VI.-On Buildings. Gives report on roofing, and report on freight house floor construction. Ills. 17500 w. Bul Am Ry Engng Assn—Feb., 1913. No. 40404 N.

Cable Railways

Mont. Blanc Mountain-Railway (Les chemins de fer du massif du Mont-Blanc). P. Dalimier. Construction details in proposed aerial cable to l'Aiguille du Midi. Ills. and plates. 6800 w. Génie Civil—Nov. 23, 1912. No. 38490 D.

Automatic Car-Bumpers and Barriers for Drawbridge Approaches. Illustrates and describes two devices invented by J. B. Strauss. 1200 w. Eng News-Nov. 14, 1912. No. 37591.

Chicago

Proposed Development of Chicago Rail-Facilities. Recommendations by John F. Wallace for two new passenger terminals, one for the south side and one for the west side. 4500 w. Ry Age Gaz
—Oct. 24, 1913. No. 46196.

Classification Yards

New Coal Classification Yards of the Philadelphia & Reading Ry. at St. Clair, Penn. Joseph S. Ward. Illustrated de-tailed description of the yard, bridges,

drainage, water supply, buildings and structures. 7500 w. Eng News—Sept. 18, 1913. No. 45220.

Coaling Stations

Notes on the Design and Operation Costs of Modern Locomotive Coaling Stations. Notes based on a report of a committee of the Int. Ry. Fuel Assn. Deals with the types of stations, materials and cost. 2500 w. Engng & Con-July 23, 1913. Nc. 43874.

Concrete

Concrete Practice—National Railways of Mexico. A. M. Wolf. Illustrated description of a plain concrete pier and abutment, and a reinforced concrete abutment. 1500 w. Ry Engng & Main of Way—July, 1913. No. 43770.

Concrete Buildings

Concrete Buildings on the Lackawanna. Illustrated descriptions of passenger stations and signal towers of attractive design. 1000 w. Ry Age Gaz—Sept. 19, 1913. No. 45261.

Recent Applications of Concrete on the Long Island R. R. From a paper by Frederick Auryansen, read at the Nat. States advan-Assn. of Cement Users. tages and illustrates and describes recent work. 4500 w. Ry & Engng Rev—Aug. 30, 1913. No. 44877.

Construction

Methods and Cost of Constructing the Bear Creek Branch of the Cincinnati, New Orleans and Texas Pacific Railway. David W. Stradling. Explains methods used to reduce the cost of construction on some work where economy was important. 4000 w. Engng & Con—Feb. 5, 1913. No. 39702.

Construction Work on a Short Railroad Branch. Describes work on a branch of the Central R. R. of New Jersey, building bridge piers in shallow water, cofferdams, erecting long girders with derrick car, and making fill with movable trestle. Ills. 2500 w. Eng Rec-June 14, 1913. No. 42828.

Construction Organization

The Burlington's Construction Organization. An account of the duties of the superintendent of construction equipment and explanation of the system used. 1700 w. Ry Age Gaz—July 18, 1913. No. 43801.

Application of Geometric Anamorphosis to Parabolic Transition Curves. Manuel G. de C. Rueda. Describes the method adopted. 850 w. Bul Int Ry Cong-March, 1913. No. 40914 G.

Formulas for Radial Distances Between Curves. George Paaswell. Mathematical. 900 w. Eng News-March 20, 1913. No.

40741.

The Plotting of Railway Curves. J. L. Busfield. Explains a method used with success in Great Britain. 1500 w. Can Engr—June 19, 1913. No. 42993. A Special Problem in Reverse Curves.

William C. Crosby. Presents the problem and its solution. 1200 w. News_June 26, 1913. No. 43314.

See Surveying, under CIVIL ENGINEER-ING, Measurement.

Deterioration

Observations Noted Since 1908 as to the Various Causes of Wear and of Deterioration of Roadways. Abstracts of the reports presented at the Third Int. Road Cong. at London. Deals with roadways in town, and suburban districts, and in surburban districts and open country. 6500 w. Engng & Con-July 16, 1913. No. 43819.

Drainage

Drainage of Railway Roadbed. J. T. Bowser. Considers methods of disposal of surface and subsurface water. w. Eng Rec-March 15, 1913. No. 40644.

Railway Drainage. Deals with the col-lection and disposal of surface water separate from the sewage drainage. Ills. 3000 w. Engr, Lond—April 18, 1913. Serial. 1st part. No. 41773 A.

Earthwork

Methods of Handling Light Earthwork. H. C. Landen. An account of experience gained in moving 330,000 cu. yds. on 14 miles of line in North Carolina, with details of force employed and cost of work. Ills. 2000 w. Ry Age Gaz—Aug. 15, 1913. No. 44405.

Embankments

The Work of Strengthening and Drainage Along the Railway Between Digne and Nice (Note sur les Travaux de Consolidation et d' Assainissement Exécutés sur le Chemin de fer de Digne a Nice). M. Perrissond. Details of retaining walls of concrete constructed to reinforce existing masonry walls. Ills. 6000 w. Ann de Ponts et Chaussées—Sept.-Oct., 1912.

No. 37489 E + F. Extra Top Width for New Fills. C. L. Fish. Gives a method of determining the extra top width to be given a new fill. Discussion. 3000 w. Bul Am Ry Eng 45415 N. Engng Assn—Aug., 1913.

Permanent Way at Million Dollars a Mile. An account of a three-mile fill on the Can. Northern Ry. across Rainy Lake. 2000 w. Con Rec—Sept. 10, 1913. No. 45067.

Feeders

Radical Departure Proposed in Railway Branch Line Service. Francis E. Drake. On the advantages of the passenger tractor (Dracar) for such service. 1500 w. Ry & Engng Rev-June 7, 1913. No. 42707.

Flood Damage

Railway Damage and Railway Reconstruction in the Ohio Flood Districts. Reports concerning damages on the B. & O. system, the Big Four, and the Toledo & Ohio Central and Zanesville and Western Railways. Ills. 3500 w. Eng News—April 24, 1913. No. 41624.

Damage by Floods to Railroads. Illustrated account of more of the damages

caused by the recent floods. 2000 w. Ry Age Gaz—April 4, 1913. No. 41073.

Floods

Flood Destruction on the San Pedro Railway. H. G. Tyrrell. Illustrated account of the floods of 1905 and 1907, and the flood of 1910 which interrupted traffic for more than four months. 2200 w. Eng News—July 3, 1913. No. 43435. Baltimore and Ohio Flood Reconstruc-

tion. Illustrated description of the general conditions existing during the re-opening of the lines with detailed data. 3000 w. Ry Age Gaz-July 18, 1913. No. 43800.

Freight Houses

Freight House Design and Operation. W. G. Arn. Discusses the design of the freight houses, layout of track facilities and methods of work. 4000 w. News-Oct. 31, 1912. No. 37206.

Freight Terminals

New York's Freight Terminal Problem. Map and explanation of the peculiar difficulties encountered and some of the solutions offered. 3000 w. Ry Age Gaz—April 11, 1913. No. 41176.

A New Railway Freight Terminal at

St. Louis. Illustrates and describes recent reconstruction work at St. Louis, Mo. 2000 w. Eng News-April 3 1913. No. 41066.

Railway Freight Station Southern and Office Building at Atlanta, Ga. Brief illustrated description. 1200 w. Ry Age Gaz—April 11, 1913. No. 41174.

Gauges

Unification of Railway Gauges in Australia. Reviews a recent report, explaining conditions and the cost of unifica-tion, the difficulties, etc. 2500 w. Engr, Lond—June 27, 1913. No. 43646 A.

Grade Crossings

I. Railway Grade Crossing Elimination Viewed From the City's Standpoint. Robert Hoffmann. II. Elimination of Grade Crossings. Albert J. Himes. III. Grade Elimination and Railroad Bridges. IV. Embellishment of G. H. Tinker. Railroad Crossings. Frederic Wm. Striebinger. Short articles discussing phases

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Location

of this subject. Ills. 5500 w. Jour Cleveland Engng Soc-Nov., 1912. No. 37544 D.

Grand Trunk Grade Separation in Toronto. Highway grade crossings are being eliminated and plans made for new terminals including a union passenger station. Ills. 4000 w. Ry Age Gaz— June 6, 1913. No. 42677.

Three Level Crossing at 15th Street, Chicago. Illustrated description of a difficult project to eliminate street and rail-

way grade crossings. 3000 w. Ry Engng & Main of Way—June, 1913. No. 42975.
Grade Crossing Elimination at Second Avenue and Try Street, Pittsburgh. Illustrates and describes improvements embodying several types of masonry and bridge-floor design. 2000 w. Eng Rec -July 12, 1913. No. 43652.

Grade Crossings and Automobiles. Editorial discussion of the question of safety at grade crossings and what should be done to meet the changed conditions. 2000 w. Ry Age Gaz—Aug. 29, 1913. No. 44804.

The Elevation of the Tracks of the Philadelphia, Germantown and Norristown Railroad, Philadelphia, Pa. tinued discussion of the paper by George S. Webster and Samuel Tobias Wagner. 3000 w. Pro Am Soc of Civ Engrs— Sept., 1913. No. 45525 F.

Grade Reduction

Grade Reduction Problems. C. P. Howard. A study of grades on a 130mile division. 7500 w. Bul Am Ry Engng Assn—Aug., 1913. No. 45413 N.

Factors Entering Into Grade Reductions. Analysis of the estimated saving in a proposed change from a 0.6 to a 0.3 per cent ruling grade on a typical 130-mile division. 2200 w. Eng Rec—Oct. 4, 1913. No. 45672.

Grade Reduction and Doubletracking on the Nashville, Chattanooga & St. Louis Ry. A description of improvements made necessary by heavy traffic. 2500 w. Eng News-Oct. 23, 1913. No. 46157.

Grades

Some Features of Grade Separation by Joint Track Elevation in Joliet, Ill. A. Cook. From a paper before the Illinois Soc. of Engrs. & Survs. Describes features of the engineering work. 2500 Engng & Con—Feb. 5, 1913. No. 39703.

Economical Limits of Grade Reduction. Walter Loring Webb. Discussion of the factors entering into an analysis of train resistances and their respective importance. 3000 w. Ry Age Gaz – March 28, 1913. No. 40943.

The Minimum Efficient Gradient. Paul M. La Bach. Considers the problem one of virtual grades and speed curves so surrounded by operating conditions that it is unsafe to draw conclusions from similarities based on grade lines alone. 1500 w. Ry Age Gaz-July 11, 1918. No. 43663.

Grading

Heavy Grading in Treacherous Material. Illustrates and describes the construction of a railroad roadbed through material that slips badly when wet. 1500 w. Eng Rec—Nov. 16, 1912. No. 37581. Grand Central Terminal

Opening of the New Grand Central Terminal, New York City. Illustrated account of this station with 33 miles of depressed tracks designed to handle 250,-000 passengers per day and built under trying traffic conditions. Also editorial. 6000 w. Eng Rec-Feb. 8, 1913. No. 39726.

The Grand Central Terminal, New York. Illustrates and describes details. 2500 w. Ry Age Gaz—Feb. 14, 1913. No. 39851.

See also Columns, and Roofs, under CIVIL ENGINEERING, Construction, and Terminals, under Permanent Way and Buildings.

Guard Rails

Guard Rail Design. F. W. Rizer. Explains the function of the guard rail, discussing its designs. Ills. 1100 w. Age Gaz—May 16, 1913. No. 42214.

See also Tracks, under STREET AND

ELECTRIC RAILWAYS. **Improvements**

The Relaying and Improvement of the Berks & Hants Junction, Reading, Great Western Railway. Describes remodeling of rail crossings on improved principles. Ills. 1400 w. Ry Gaz, Lond—Jan. 17, 1913. No. 39465 A.

Inspection

Permanent-Way Inspection by Paired-Inspector System. Erwin Hohenegger. Explains the system and its application. 1000 w. Bul Int Ry Cong-Aug., 1913. No. 44705 G.

Junctions

Fly-Over Junction on Metropolitan District Railway at Earl's Court. trates and describes interesting work near Earl's Court Station to provide means for getting trains through the station. 1200 w. Engng—May 2, 1913. No. 42005 A.

Labor The Hindoo as a Track Laborer. The seventh and last of a series of discussions of the characteristics of the various

types of maintenance workmen. 1000 w. Ry Age Gaz—Dec. 20, 1912. No. 38349. Location

The Tacheometer in Railway Location. E. R. Lewis. Shows that better results

Rails

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are possible than by present methods. Ills. 1800 w. Ry Age Gaz-Nov. 8, 1912.

No. 37331.

Report of Committee XVI-On Economics of Railway Location. Gives an analysis of maintenance of way and structural accounts, showing the influence of changes in physical characteristics of locations. 15500 w. Bul Am Ry Engng Assn—Jan, 1913. No. 40221 F.

Maintenance

Economy in Use of Materials in Railway Maintenance of Way Departments. A. Swartz. Calls attention to small losses and waste that amount to great expense in the course of the year. 2200 w. Engng & Con—March 19, 1913. No. 40736.
Winter Maintenance Methods Contest.

Gives nine papers by different writers. discussing means of meeting problems. 6000 w. Ry Age Gaz—March 14, 1913. No. 40660.

Mono-Railway

The Listowel & Ballybunion Railway. J. B. Williams. Illustrated description of a mono-railway constructed on the Lartigue system in Algeria. 700 w. Ry & Loc Engng—April, 1913. No. 41028 C.

Rack Railways

Mountain Railways About Mt. Blanc (Les Chemins de fer du massif du Mont-Blanc). P. Dalimier. Reviews present and proposed rack railways of adjacent lines and equipment. Ills. Serial. 1st part. 7500 w. Génie Civil—Oct. 19, No. 37516 D. 1912.

Vitznau-Rigi Railway. Hugh G. Boutell. Illustrated description of the first rack railway in Switzerland and its equipment. 700 w. Ry & Loc Engng—April, 1913. No. 41027 C.

Rack Railways (Le ferrovie a dentiera). Alfonso Maffezzoli. A mathematical study of the power requirements un-der varying conditions exemplified by a thorough study of several railways. Diagrams. Serial. 1st part. 4000 w. Angeg Ferro—Apr. 30, 1913. No. 42506 D. Rail Anchors

Rail Anchors or Anti-Creepers. Illustrates and describes two devices holding the rail by a wedging action. 1200 w. Eng News. Dec. 5, 1912. No. 38061.

Rail Bonding

Notes on Rail Bonding. Vincent Rhea. Discusses the comparative costs in power expended with two types of rail bonds and compares results upon the basis of a one-mile track of 40-lb. rails per year. 1200 w. Coal Age—Sept. 27. 1913. No. 45483.

Rail Corrosion

See Corrosion, under Electrical En-GINEERING, Electro-Chemistry.

Rail Failures

Rail Failures and Their Causes. H. Wickhorst. Read before the Am. Soc. for Test. Mat. Considers present available information concerning the nature of the failures and their causes. Ills. 3000

w. Eng News—July 3, 1913. No. 43436.
Rail Failure Statistics for the Year
Ending October 31, 1912. Report of the
committee on rail, with discussion. 221 pp. Bul Am Ry Engng Assn—July, 1913.

No. 45164 N.

Failure of an Open-Hearth Steel Rail. Information from James E. Howard's report to the Interstate Commerce Commission. Declares failure not due to defects in the rail, but caused by overloading. 2500 w. Ir Age—Sept. 11, 1913. No. 45053 C.

Rail Inspection

Recent Developments in the Inspection of Steel Rails. of Steel Rails. Robert W. Hunt. Outlines the stuation as it was in the early part of 1912, with information concerning present practice and the forms used. 2000 w. Bul Am Inst of Min Engrs-Dec., 1912. No. 38371 F.

Rail Joints

New Type of Rail Joint for Bascule and Vertical-Lift Bridges. Illustrated description of the rail joint and locking device which has been in successful operation for the past year on the Calumet River bridge near S. Chicago. 1500 w. Ry & Enging Rev-May 10, 1913. No. 41976.

Cast-Weld Joints and Steel Ties in Brooklyn. Illustrates and describes the latest cast-weld joint practice for curves and tangents on some experimental steel tie construction. 3000 w. Elec Ry Jour —Oct. 25, 1913. No. 46212.

Reports of Committee on Rail. ports ductility and elongation tests, abrasion tests of rail on revolving machine, influence of titanium and pipeless ingots in rail manufacture, ductility, etc., giving rail failure statistics. Ills. 411 pp. Bul Am Ry Engng Assn—July, 1912. No. 37681 E.

Inspection of Steel Rails. Robert Job. An account of the system in use by the Reading and the Lehigh Valley, discussing methods proposed and tried in the effort to safeguard the quality of rails. 2500 w. Ry Age Gaz-Nov. 1, 1912. No. 37249.

Titanium Rails. Explains how titanium should be used in order to have it accomplish the intended work and gives a report of service tests. 1700 w. Ry Age Gaz-Dec. 13, 1912. No. 38187.

Rails

Investigation of Silvery Oval Spots, Sometimes Called "Transverse or Internal Fissures," in Rail Heads. W. C. Cushing. Reports an investigation of this type of rail failure. Ills. 2500 w. Bul Am Ry Engng Assn—Nov., 1912. No. 39559 N.

Report of Committee IV on Rail. The work for the year included a revision of the manual, recommendations on standard rail sections, investigation of rail failures, special investigation of rails, etc. 7500 w. Bul Am Ry Engng Assn—Nov., 1912. No. 39558 N.

Rail Research by Railroads and Producers. M. H. Wickhorst. Brief report of the results obtained by the joint efforts of steel rail users and manufacturers. 2500 w. Ir Trd Rev—Feb. 13, 1913. No. 39845.

Rail Creeping. J. G. Van Zank. Considers this trouble, its causes; results, appliances known as "anti-creepers," tests, prevention, etc. Ills. 3000 w. Ry Engng & Main of Way—March, 1913. No. 40789.

Classification of Second Hand Rail. Jay See. Outlines method used for grading and handling. Ills. 2500 w. Ry Age Gaz—April 18, 1913. No. 41351. Comparative Notes on Steel Rail Roll-

Comparative Notes on Steel Rail Rolling. Robert W. Hunt. Notes showing the importance of mechanical and heat treatment of metal. 1200 w. Bul Am Inst of Min Engrs—May, 1913. No. 42462 F.

Creeping of Rails. Paul M. La Bach. Briefly considers the principal causes of creeping. 1500 w. Ry Age Gaz—May 16, 1913. No. 42212.

Safety in Travel as Affected by the Steel Rail. Illustrated condensed sketch of the present methods of rail manufacture, pointing out the lines along which improvement is being sought. 3000 w. Sci Am—June 7, 1913. No. 42667.

Steel Rail Failures and Some of Their Causes. M. H. Wickhorst. Read before the Am. Soc. for Test. Mat. Classifies various rail failures and considers their causes.. Ills. 3000 w. Ir Trd Rev—June 26, 1913. No. 43237.

Shape, Material and Resistance of Rails. A. Flamache. Discusses systems of track suitable for main railroads, and the strength of the rails, their weight, etc. 7600 w. Bul Int Ry Cong—July, 1913. No. 43979 G.

Nomographic Method for Finding Center of Gravity and Moment of Inertia. Describes a new method which consists in drawing a "curve of moments" and a "curve of inertia" for the rail section under consideration and measuring their respective areas by the planimeter. 1000

w. Ry Age Gaz—Aug. 29, 1913. No. 44810.

Specifications for Manganese Steel Rails. Gives the specifications of the Manganese Steel Rail Co., New York. 1000 w. Ry Age Gaz—Aug. 15, 1913. No. 44407.

Rail Tests

The Testing of Rails. R. Scheibe. Reviews a theoretical article about the quality co-efficient of the metal used for the track and rolling stock of railways, giving a summary of the article by Dr. H. Saller. 2200 w. Bul Am Ry Engng Assn—Nov., 1912. No. 39563 N.

Report Systems

Daily Time and Material Report Systems. Explains methods being tried by the maintenance departments of several roads to secure better reports. 1500 w.

Ry Age Gaz—Sept. 19, 1913. No. 45260.

Right of Way

Right of Way Multiples in California.

Walter Melvin Wells. First of three articles discussing the general questions involved and giving a tabulation of the results determined. Also editorial. 8000 w. Engng & Con—Aug. 13, 1913. Serial, 1st part. No. 44343.

Roadway

Report of Committee I—On Roadway. Mainly a report on tunnel construction and ventilation. 13000 w. Bul Am Ry Engng Assn—Feb., 1913. No. 40407 N.

Roundhouses

New Locomotive Terminal at Mohon (Nouveau dépot de locomotives de Mohon). M. M. Henry and Valat. Describes new building for the Compagnie de l'Est. Ills. 4600 w. Rev Gen d Chemins de Fer—Dec., 1912. No. 38486 G.

Superior European Roundhouse Facilities. Henry W. Jacobs. Describes facilities on the Hungarian State Rys. and in France. Ills. 2500 w. Am Engr—April, 1913. No. 41090 C.

Sheds

See Reinforced Concrete, under CIVIL ENGINEERING, Construction.

Shops

Transcona Shops of the National Transcontinental Railway. George S. Hodgins. Illustrates and describes construction and equipment features. 2500 w. Mach (Ry Ed)—Dec., 1912. No. 38106 C.

Shop Improvements at Burnside, Ill. Illustrates what may be done to improve power conditions at old shops. Ills. 1500 w. Am Engr—April, 1913. No. 41091 C.

Standardization
Standardization on Continental Railways. Discusses the items already

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agreed upon. 1400 w. Ry Gaz, Lond—Nov. 15, 1912. Serial. 1st part. No. 37811 A.

The Efforts to Standardize American Railways. Mr. Wernekke. States the early conditions which resulted in a chaotic aggregate, and the progress made toward uniformity. 3800 w. Bul Int Ry Cong—June, 1913. No. 43173 G.

Stations

Supplying the Berlin Railway Station With Gas (Die Versorgung der Berliner Bahnhöfe mit Oelgas). Description of the work caused by laying pipes through the streets, over bridges, etc. Ills. Serial. 1st part. 4000 w. Glaser's Ann—Oct. 1, 1912. No. 37418 D.

Underground Features of the Paris-Nord Station for Baggage (Souterrain de la Gare de Paris-Nord pour le Transport des Bagages). M. M. Sabourin and Théry. Describes arrangement of tracks and station for passenger and baggage service. Ills. 2700 w. Rev Gén des Chemins de Fer—Sept., 1912. No. 37491 G. The New Snow Hill Station, Birming-

The New Snow Hill Station, Birmingham, Great Western Railway. Illustrations and description of an extensive stastion recently completed. 1200 w. Ry Gaz, Lond—Jan. 24, 1913. No. 39783 A.

Attractive Stations for Small Towns. Illustrates and describes new passenger facilities on the Buffalo, Rochester and Pittsburgh. 600 w. Ry Age Gaz—Feb. 28, 1913. No. 40241.

The New Station at Leipzig (La nouvelle gare centrale de Leipzig). A. B. des Chaumes. Details of construction and illustrations of finished structure. Plates. 3000 w. Genie Civil—Feb. 15, 1913. No. 40592 D.

New Passenger Station for the D., L. & W. R. R. at Montclair, N. J. Illustrations and descriptive details of a beautiful station. 1200 w. Ry & Engng Rev—July 12, 1913. No. 43691.

The Architecture of Railway Stations. M. S. Briggs. A review of the development of railway stations in England. 3000 w. Archt, Lond—Aug. 8, 1918. Serial, 1st part. No. 44448 A.

Reconstruction of the G. W. R. Snow-Hill Station, Birmingham. F. Gleadow and C. E. Shackle. Illustrated detailed description of the reconstructed station. Plate. 4500 w. Engr, Lond—Sept. 12, 1913. No. 45407 A.

The New Central Station at Copenhagen (La nouvelle gare centrale de Copenhague). Brief description of location and general appearance of the new railway depot. Ills. and Plate. 1100 w. Genie Civil—Aug. 23, 1913. No. 45353 D.

Structures

Bridges, Viaducts and Embankment Work of the New York Connecting Railroad. Illustrates and describes structures. The principal one is the 4-track 1000-ft. steel arch span across Hell Gate. 2000 w. Eng Rec.—July 19, 1913. No. 43791.

Subway Construction

Unit System of Subway Construction. A. R. Eitzen. Illustrates and describes construction work of the Kansas City Terminal. 800 w. Ry Age Gaz—Dec. 13, 1912. No. 38183.

Switches

Railway Switches and Track Layouts. J. L. Busfield. A general description of the construction of switches and their assembling in groups to give yard layouts, and related problems. Ills. 2500 w. Can Engr—April 3, 1913. No. 41098.

A New Automatic Railway Switch. Illustrated description of the Goodrich automatic switch and its action. 2000 w. Engng & Con—Aug. 20, 1913. No. 44496.

Improved Slip-Switch Crossings: Pennsylvania R. R. Illustrates and describes a new design of double slip-switch crossing for movements between tracks. 2000 w. Eng News—Aug. 7, 1913. No. 44250.

Terminals

New Terminal Plan for Chicago by Mr. Jarvis Hunt. Plans and description of a proposed rearrangement of railroad terminal facilities as a means of remedying the unsatisfactory situation. Ills. 2000 w. Ry & Engng Rev—Nov. 23, 1912. No. 37798.

Rail and Water Terminal Construction at Texas City. Harvey A. Thomas. Illustrates and describes warehouse, grain elevator, conveyor systems, etc. 2500 w. Ry & Engng Rev—Nov. 16, 1912. No. 37660.

The Kansas City Freight and Passenger Terminal. A. D. Ludlaw. Gives the general layout of work and a detailed description of unit subway construction. Ills. 2000 w. Concrete-Cement Age—Nov., 1912. No. 37586.

Watervliet Terminal, Delaware & Hudson Co. J. C. Chapple. Illustrated description of an extensive modern plant five miles from Albany. 4500 w. Ry Engng & Main of Way—Dec., 1912. No. 38338.

Railway Terminals. L. C. Fritch. From an address before the Can. Ry. Club. Gives details of cost of the immense passenger terminals and their maintenance, and especially discusses.

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conditions at Chicago. 2200 w. Ry Age Gaz—Jan. 17, 1913. No. 39204. Latest Passenger Terminal Train Shed.

Summary of advantages and disadvantages of various types of train shed and illustrated description of continuous lowroof sheds at Jersey City and Ottawa. 3000 w. Eng Rec-Jan. 4, 1913. No.

Jamaica Improvement of the Long Island Railroad. Illustrates and describes new yard and station facilities at junction of steam lines with electric branches leading into New York City. 2000 w.

Eng Rec—Jan. 11, 1913. No. 38958.

New "Cotton Belt" Freight Terminal at St. Louis. Winters Haydock. Illustrated description of a new terminal

discussion. 8500 w. Pro Ry Club of Pittsburgh—Jan. 24, 1913. No. 39943 C.

Centralia Terminal, Illinois Central R. R. Illustrated detailed description of a recently completed up-to-date terminal. 3000 w. Ry Mas Mech—Feb., 1913. No. 39923 C.

Railway Terminals. L. C. Fritch. Read before the Can. Ry. Club. Discusses the subject generally and the Chicago problem in particular. 4000 w. Ry & Engng Rev -March 15, 1913. No. 40692.

Railway Terminals in Large Cities and the Latest Chicago Terminal Project. Editorial discussion of this problem, especially the various projects suggested for Chicago. 2500 w. Eng News—Feb. 27, 1813. No. 40240.

Grand Trunk Terminal at Ottawa, Ont. Illustrated description of the new union passenger station and Chateau Laurier. 3000 w. Ry Age Gaz—March 7, 1913. No. 40358.

Construction Work of the Kansas City Terminal Ry. Illustrated description of new work in progress which will give Kansas City the second largest railway station in the United States. The improvements are estimated to cost about 30,000,000 dollars. 3500 w. Ry & Engng Rev—March 16, 1913. No. 40691.

Centralia Terminal, I. C. R. R. Illustrated detailed description of a recently completed up-to-date terminal at Centralia, Ill. 2500 w. Ry Eng & Main of Way—March, 1913. No. 40790.

New Kansas City, Mo., Passenger Terminal. Plan, map, and illustrated de-scription of a project including belt line and complete facilities. The union station for all roads is nearly completed.

2500 w. Ry Age Gaz-May 23, 1913. No. 42355.

Progress on the Grand Central Terminal. Illustrated description of the project and of details of construction. 2800 w. Ry Age Gaz-Nov. 22, 1912. No. 37760.

Monumental Gateway to a Great City. Illustrated account of the completing of the Grand Central terminal in New York. 4000 w. Sci Am—Dec. 7, 1912. No. 38071.

New Terminal for New York Central Lines. Illustrated description of this terminal and its electrical features. 5000 w. Elec Wld-Dec. 21, 1912. No. 38356.

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A Maintenance-of-Way Department Railroad Testing Plant. B. B. Milner. Remarks on the deficiency of experimental work in this field, with suggestions. 2500 w. Jour Fr Inst—Aug., 1913. No. 44544 D.

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Automatic Sleeper-Adzing and Boring Machine. Illustrated description of a machine which under test was able to adze and bore six sleepers per minute. 800 w. Engng—Sept. 19, 1913. No. 45569 A.

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Hard-Wood Inset Rail-Plates for Railway Ties (Hartholz-Einsatzplatte für Eisenbahnschwellen). M. Matthaei. Novel scheme for increasing cost of ties by inlaying dove-tailed hardwood sections. Ills. 2000 w. Glaser's Ann—Oct. 1, 1912. No. 37420 D.

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Prolonging the Useful Life of Cross-Ties. Observations and recommendations pointing to possible economies in track maintenance. 3000 w. Eng Rec-Nov. 30, 1912. No. 37964.

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The Laying of Rails on Wooden Sleepers for Busy Express Lines. E. C. W. Van Dijk. From *De Ingenieur*. Read before the Roy. Inst. of Dutch Engrs. Illustrated discussion of methods of laying rails. 7500 w. Bul Int Ry Cong-March, 1913. No. 40916 G.

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Effect of Metal and Treated Ties on Track Circuits. From the report of the committee on signals and interlocking of the Am. Ry. Engng. Assn. 2200 w. Ry & Engng Rev—May 17, 1913. No. 42257.

New Tie Treating Plant, B. & O. R. R. F. J. Angier. Illustrated description of the plant at Green Spring, W. Va. 2000 w. Ry & Engng Rev—May 17, 1913. No. 42256.

Tie Renewals and Ballasting. Fourth of a series of articles on maintenance topics. Methods of handling tie renewals

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The Piecework or Unit System of Handling Ties and Timbers. W. W. Eldridge. Explains the object and the advantages of the piece work system. Discussion. Ills. 5000 w. Am Wood Pres Assn-Jan, 1913. No. 43274 N.

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A Comparison of Zinc Chloride with Coal-Tar Creosote for Preserving Cross-Ties. Howard F. Weiss. Information on the merits and deficiencies of each. General discussion. 15500 w. Am Wood Pres Assn—Jan, 1913. No. 43265 N.

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Fireproof Railroad Section Tool Describes various methods of Houses. construction, giving suggested detailed plans and cost. 2000 w. Ry Engng & Main of Way—Sept., 1913. Serial, 1st part. No. 45175.

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New Track Appliances. From a committee report to the Roadmasters' and Main. of Way Assn. Deals with manganese steel, tie-plates, rail-frogs and other appliances. 3500 w. Ry & Engng Rev — Oct. 11, 1913. No. 45820.

Track Scales

Track Circuits

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The Track Labor Problem. F. L. Jandron. Discusses the present track employee and the reasons why he should be put on a definite footing in regard to wages. 4000 w. Ry & Engng Rev—April 19, 1913. No. 41367.

Efficiency of Maintenance of Way Labor. H. C. Landon. Discusses the

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Material for Railway Construction (Die Baustoffe der Spurbahnen). A. Haarmann. A general résumé of track material with special attention to rail forms and steel cross-ties. Ills. 6300 w. Stahl u Eisen-Jan. 2, 1913. No. 40000 D. Tracks

The Maintenance of Track. T. Thomp-The importance of good drainage, lining, surfacing and related matters are discussed in detail. 1800 w. Ry Age Gaz—Nov. 15, 1912. No. 37602. Track Construction Methods and Costs.

Jos. D. Evans. An illustrated account of present construction methods and system of supervision and cost-keeping on the Montreal Tramways Co.'s lines. 5500 Can Elec News-Nov., 1912. No. 37260 C.

The Formation, Constitution, Importance and Utilization of the Osnabrück Track Museum. Dr. Haarmann. Information concerning this museum, and concerning progress and improvements in tracks. Ills. 7200 w. Bul Int Ry Cong -Nov., 1912. No. 37709 G.

The Japanese as a Track Laborer. The sixth of a series of discussions of the characteristics of the various types of maintenance workmen. 2500 w. Ry Age Gaz—Nov. 15, 1912. No. 37604. Stremmatograph Tests of Track Under Service Conditions. P. H. Dudley. A report of tests made. 2500 w. Bul Am Ry Engng Assn—Nov., 1912. No. 39562 N.

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Stimson. An account of a system applied on the Phila. division of the B. & O. railroad which has resulted in increased efficiency. 1500 w. 1913. No. 40642. Eng Rec-March 15.

Development in the Use of Screw pikes. Illustrated description of this type of track construction, now used on 730 miles of track. 5000 w. Ry Age Gaz
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Third and Fourth Track Construction.

Illustrated descriptions of the problems encountered on the N. Y. Central between Albany and New York. 1500 w. Ry Age Gaz—March 14, 1913. No. 40662.

English Track on the Pennsylvania Railroad. Jos. T. Richards. A report of a comparative test of English and American track under the same conditions. Shows that the English track did not last as long as the American type. Ills. 5000 w. Bul Am Ry Engng Assn-March, 1913. No. 40624 N.

Some Features of Double-Track Railroad Construction on the Chicago, Milwaukee and St. Paul Railway in South Dakota. F. W. Van Buskirk. Illustrated

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Recommendations adopted by the American Railway Association provide a standard to which railroads can work. 5000 w. Ry Age Gaz-June 20, 1913. No. 43102.

Company-Force Work on the Louisville & Nashville Railroad. Brief illustrated description of special equipment and results on grade revision. 2000 w. Eng Rec-Aug. 9, 1913. No. 44244.

The Relation Between Load, Rail Profile and the Number of Cross Ties (Het verband tusschen de belasting, het spoorstaafprofiel en het aantel dwarsliggers). E. C. W. Van Dijk. Mathematical discussion on the theoretical construction of tracks. Diagrams. 10400 w. De Ing-enieur—Aug. 23, 1913. No. 46095 D.

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Track Tanks

PERMANENT WAY AND BUILDINGS

Yards

150-ton, four-section track scale, and for a 60-ft., 150-ton, six-section track scale. 2000 w. Bul Am Ry Engng Assn-Aug., 1912. No. 37678 E.

Weighting Methods on the St. Louis & San Francisco. Abstract of statement by E. D. Levy to the Interstate Commerce Describes methods Commission. ployed. 2500 w. Ry Age Gaz—Jan. 24, 1913. No. 39401.

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Design and Maintenance of Track anks. George W. Vaugh 1. Discussion of the location, length and width of troughs, the two types of heating systems, and roadbed drainage. 4500 w. Ry Age Gaz-April 18, 1913. 41349.

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Recent Practice in the Costs of Turntable Construction on American Railways. A summary of standard practice on 57 American railways. Ills. 95000 Engng & Con-Nov. 6, 1912. 37284.

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Utica General Improvement on the New York Central & Hudson River Railroad. Illustrates and describes changes, including the elimination of grade crossings, new station, freight houses, yard and engine terminal. 5000 w. Eng Rec -May 31, 1913. No. 42642.

Water Service

Report of Committee XIII.—On Water Service. Considers especially deep well pumps, describing recent developments in pumping machinery. Also track. Ills. 13000 w. Bul Am Ry Engng Assn—Feb., 1913. No. 40405 N.

Water Stations

Cost of the Standard Water Station of the Missouri Pacific Railway. David W. Stradling. Itemized data on cost of the usual type. Ills. 1000 w. Engng & Con —Oct. 22, 1913. No. 46133.

Water Tanks

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Water Towers
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Water Troughs
Railway Water Troughs. Reviews briefly the use of these troughs, and discusses the practice and difficulties which arise. 1500 w. Ry Gaz, Lond-May 23, 1913. No. 42745 A.

Widening

The Euston to Walford Widening. Brief illustrated description of new and widened lines on the L. & N. W. Ry. to be worked electrically. 500 w. Engr, Lond —Feb. 14, 1913. No. 40137 A.

Report of Committee XIV.—On Yards and Terminals. Gives typical situation plans of passenger stations, with analysis of working capacity; freight handling by mechanical means; design and operation of hump yards. Ills. 16000 w. Bul Am Ry Engng Assn—Feb., 1913. No. 40406 N.

New Classification Yard at Winnipeg. Illustrated description of a gravity yard building for the Canadian Pacific de-

signed for 12,000 cars capacity. 1800 w. Ry Age Gaz—April 18, 1913. No. 41348. Influence of Bad Weather on the Work at Sorting and Shunting Yards. Dr. Sammat. Discusses measures to facilitate sorting even if the work at Sorting even if the work 1918. 6700 w. Bul Int Ry. Cong-May, 1913. No. 42263 G.

Reconstruction of Chicago Clearing Yard. Plan and description of a proposed enlargement. 1500 w. Eng Rec— June 28, 1913. No. 48306. Boston & Maine Yard at Mechanicville.

Illustrated description of the construction of a large hump yard with engine terminal, and transfer station. 2500 w. Ry Age Gaz-Oct. 24, 1913. No. 46200.

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Agricultural Promotion Work of the Railways. Frank Andrews. Abstract from Bul. 100 of U. S. Dept. of Agri. Gives statistics showing the character and importance of the work. 8000 w. Ry Age Gaz—Nov. 15, 1912. No. 37599.

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The Pennsylvania and the New York Central. A study of the annual reports of both roads. Map. 3500 w. Ry Age Gaz—March 7, 1913. No. 40357.

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Bulgarian Railways (Die Staatsbahnen Bulgariens). Franz Manek. A review of systems, rolling stock and traffic. Ills. 1500 w. Zeit des Oest Ing u Arch Ver—Feb. 14, 1913. No. 40549 D.

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Clearing House

Reform of Railway Methods. Gattie. Abstract of a lecture to the Great Central Ry. Debating Soc. Considers the proposed Goods Clearing House for London. 2000 w. Ir & Coal Trds Rev—Nov. 1, 1912. No. 37552 A.

The Proposed Railroad Clearing House. From a book on R. R. Accounting, by W. E. Hooper. Information concerning the plan and the work. 5500 w. Ry Age Gaz—Jan. 17, 1913. No. 39201.

Coal Cars An Analysis of the Coal-Car Situation. A. T. Shurick. Reviews the outlook for the coming season. 4000 w. Coal Age-Sept. 27; 1913. No. 45482.

Earnings

The Trend of Railway Earnings. Frank Haigh Dixon. Gives statistics showing that while the record of the past year is not good, there has been a change for the better. 2000 w. Ry Age Gaz— Dec. 27, 1912. No. 38630.

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Railway Officers on the Situation. symposium of the views of railway officers on subjects relating to the business outlook, regulation of wages, safety and railway facilities. Also editorial. 12800 w. Ry Age Gaz-Dec. 27, 1912, No. 38629.

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Railway Efficiency. A. Crumpton.
Read before the Can. Ry. Club. Discusses the ways in which railways fail in efficiency and how to increase the efficiency. 4000 w. Can Engr-Sept. 18, 1913. No. 45252.

Express Handling

Electric Express Handling at the North Station, Boston. Illustrated detailed description of electric truck service. 2000 w. Elec Wld-Feb. 15, 1913. No. 39883.

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The Rates and Practices of Express Companies. Arthur S. Field. An account of the more important objects of complaint against the rates and practices of express companies, and the remedial changes. 10800 w. Am Ec Rev—June, 1913. No. 43285 H.

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Getting More Movement for Freight Cars. Arthur Hale. Suggestions regarding means of overcoming delays at terminals. 2500 w. Ry Age Gaz—Aug.

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ELECTRIC RAILWAYS.

Freight Cars Getting More Movement for Freight Cars. E. H. DeGroot, Jr., and F. M. Lucore discuss Arthur Hale's recent article, and suggest methods for increas-

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Uncle Sam's Freight Cars. J. Garrett Reprint from Everybody's Mag. Favoring the government ownership of railway freight equipment—but not of the railways. 1200 w. Ry Age Gaz—Sept. 5, 1913. No. 44981.

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Mechanical Handling of Baggage and Freight. Abstract of paper by William C. Carr and of the discussion before the New England R. R. Club. 1500 w. Ry

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Relations Between the Goods Services on Main Railroads and on Light Railways. A. Campiglio. Deals with the effect of inequality between the mileages of goods upon railways and analyses the conditions of interchange of rolling stock, etc. 6700 w. Bul Int Ry Cong-May, 1913. No. 42261 G.

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Rules of Interchange. Report of the committee on proposed changes in the rules of interchange. 18500 w. Pro W Ry Club-March 18, 1913. No. 41687 C.

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Car Efficiency. Jos. R. Cavanagh. Suggests the organization of a clearing house for keeping and clearing the accounts, and pooling all cars. 1200 w. Ry &

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Interstate Commerce Commission's Annual Report. Reviews the recommendations for a physical valuation and for control over railway capitalization. 3000 w. Ry Age Gaz—Dec. 20, 1912. 38345.

Limitations of Commissions' Powers. H. T. Newcomb. Supreme Court decisions hold that Commission's orders must show the evidence on which they are based. 2500 w. Ry Age Gaz-Jan. 3, 1913. No. 38793.

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Mail Carrying Railways Underpaid. Abstract from a statement by committee on railway mail pay showing that com-pensation does not equal operating expenses. 4500 w. Ry Age Gaz—Nov. 15, 1912. No. 37600.

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Union Pacific-Southern Pacific Merger Dissolved. Gives the full text of Justice Day's opinion in the unanimous Supreme Court decision in the Harriman Lines merger case. Also editorial. 85000 w. Ry Age Gaz-Dec. 6, 1912. No. 38067. N. Y., N. H. & H

New York, New Haven and Hartford. A review of this system and its operation, its financial policy and management. 2500 w. Ry Age Gaz—Dec. 13, 1912. No. 38182.

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An Interesting Transportation Sys-m. Map and illustrated study of the lines of the U.S. Steel Corporation from Minnesota mines to Pittsburgh mills. 5500 w. Ry Age Gaz—Sept. 19, 1913. No. 45258.

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Railway Economics

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Regulations

Railway Economics

The Steam Railroad. B. A. Worthington. Address delivered at the dedication of the transportation buildings, Univ. of Illinois. Discusses the railroad situation and the economic problems connected. 2700 w. Ry & Engng Rev — May 10, 1913. No. 41977.

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The Needs of the Railways. Samuel O. Dunn. Discusses safety, capacity, improvements needed, capital, and other items. 5500 w. Ry Age Gaz—Feb. 21, 1913. No. 39979.

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Rates

The Course of Railway Rates Since 1870. William Z. Ripley. Reviews the changes in freight rates and discusses receipts per ton mile. Also editorial. 8000 w. Ry Age Gaz—Nov. 8, 1912. No. 37330.

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Supreme Court Decides Minnesota Rate Case. Decision on the power of a state to regulate rates within its own border. Also editorial. 2800 w. Ry Age Gaz—June 13, 1913, No. 42817

Also editorial. 2800 w. Ry Age Gaz—June 13, 1913. No. 42817.
Why Freight Rates Should Be Increased. Daniel Willard. From the Phila. Public Ledger. The heavy increase in expenses, rise in interest rates, and the need of larger earnings for proper

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The Question of Increased Freight Rates. A. B. Hulit. Outlines a plan for investigating the subject, and argues that an advance would help farmers. 3500 w. Ry Age Gaz—July 25, 1913. No. 43922. Railroad Cost and Efficiency. A dis-

Railroad Cost and Efficiency. A discussion of the question of allocating expenses to passenger and freight service. 1500 w. Ry Age Gaz—July 11, 1913. No. 43665.

Decision in the Express Rate Cases. Gives the opinion by Commissioner Marble ordering lower rates. 3500 w. Ry Age Gaz—Aug. 8, 1913. No. 44259.

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A Practical Plan for Standardizing Railroad Records. F. Lincoln Hutchins. Outlines the elements of a practical standardization. 1800 w. Engineering Magazine—Aug., 1913. No. 43911 B.

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Registering Machines in the Railway Services. H. Marchand. Illustrated description of the machines. 2200 w. Bul Int Ry Cong—Aug., 1913. No. 44704 G.

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Freight Car Tactics or Regulations. Arthur Hale. Discusses the problems in the handling of freight cars and the need of tactics more than of rules. 4000 w. Ry Age Gaz—Jan. 24, 1913. No. 39400. Regulation of Railways. W. W. Fin-

Regulation of Kailways. W. W. Finley. Abstract of an address delivered at a dinner given by the Chamber of Commerce, New Haven, Conn. 35000 w. Ry Age Gaz—Feb, 7, 1913. No. 39716.

Regulation of Utilities by Commission. Halford Erickson. Abstract of a paper read before the Western Soc. of Engrs. The part dealing with the regulation of railroads. Principles that should be applied and methods used in dealing with service, rates, and financial return. 7000 w. Ry Age Gaz—March 28, 1913. No. 40944.

South Africa TRAFFIC Valuation

South Africa

Railways of the Union of South Africa. E. R. Lewis. Explains the organization, engineering, operating and financial features of a system of 9,050 miles, owned and operated by the government. 3500 w. Ry Age Gaz—May 16, 1913. No. 42209.

Statistics

Railroads. J. Hunt. Considers the railroads of the United States in relation to the rest of the world with regar' to mileage, equipment, number of employees, accidents and finances. 1800 w. Yale Sci M—March, 1913. No. 40429 C.

Statement of Railway Administration for the Year 1913 (Etat der Eisenbahnverwaltung für das Etatsjahr, 1913). A statistical review of Prussian railway conditions. 5500 w. Glasers Ann—Feb. 1, 1913. No. 40522 D.

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Equated Tonnage Method of Making Up Freight Trains. E. C. McMillan. Explains the method and its advantages, and illustrates the Standard train resistance computer which embodies this principle. 2000 w. Ry & Engng Rev—Nov. 2, 1912. No. 37271.

Tables for Finding Proper Tonnage Rating. Paul M. La Bach. Gives acceleration and retardation figures, and their use in solving problems of railway location and train loading. 3300 w. Ry Gaz, Lond—Jan. 17, 1913. No. 39468 A.

Analysis of the Determination of Economical Freight Train Tonnages. Abstract from the report of R. N. Begren giving formulae and other deductions drawn from a series of dynamometer runs and a discussion of the conditions affecting train resistances. 3000 w. Eng Rec—March 22, 1913. Serial. 1st part. No. 40765.

Railway Construction and Train Tonnage. R. N. Begien. Abstract of a paper on "Dynamometic Tests in the B. & O. R. R. and Their Application to Tonnage Rating." Discusses the relation between train tonnage and physical characteristics of the road. 4000 w. Eng News—April 10, 1913. No. 41165.

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Valuation

Railroad Valuation: Reproduction Cost Now as a Sole Basis for Rates. D. F. Jurgensen. Quotes the law bearing on the subject and discusses the correct method to be employed in valuing railroads. 4000 w. Jour Assn of Engng Socs—Dec., 1912. No. 38653 C.

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Misapplication of Interest, Contingencies and Engineering Items for Valuing Railroads by Cost of Replacement Method. D. F. Jurgensen. A reply to criticisms on an earlier paper. 2000 w. Jour Assn of Engng Socs—Aug., 1913. No. 44521 C.

The Railway Valuation Act. Gives the act passed by the U. S. Senate on Feb. 24, with editorial comment. 4000 w. Eng News—March 6, 1913. No. 40356.

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Physical Valuation of Railroads. Will-

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Convention

proper treatment of the different items to be taken into account. 3000 w. Eng Rec-June 14, 1913. Serial. 1st part. No. 42824.

The Supreme Court's Comments on Valuation. In the Minnesota rate case the Supreme Court in the opinion by Justice Hughes discusses railroad valuation. 7000 w. Ry Age Gaz-June 20, 1913. No. 42997.

Assignment of Equipment Valuation by States. A. I. Thompson. Abstract of paper read before a conference of R. R. Commissioners of Miss. Valley States.

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See same heading and Arbitration.

under Industrial Economy.

Warehouse Trucks

See_also same heading, under STREET AND ELECTRIC RAILWAYS, and Electric Trucks, under MECHANICAL ENGINEER-ING, Automobiles.

Weighing

Weighing Methods on an Eastern Trunk Line. Describes the organization and method of handling scales and weighing. 1600 w. Ry Age Gaz—May 2, 1913. No. 41803.

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African Railways

Some Features of the West African Government Railways. Frederic Shelford. Description, with discussion and correspondence. Map. 83 pp. Inst of Civ Engrs—No. 3976. No. 39299 N. Alaska

Transportation Facilities in Alaska. Duncan M. Stewart. An explanation of the situation in Alaska. 7500 w. Pro Am Min Cong—Nov. 25-29, 1912. No. 44066 N.

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Bolivia

Railroads and Transportation Prob-lems in Bolivia. G. W. Wepfer. Map and description of conditions and possibilities of the mining industry. 1500 w. Min & Sci Pr—July 19, 1913. No. 43853.

Canada

Canada's Most Successful Railway Year. J. L. Payne. A detailed study showing the growth of mileage, facilities, Successful Railway traffic and earnings during the year ending June 30, 1912. 5000 w. Ry Age Gaz—Jan. 24, 1913. No. 39398. On the Intercolonial Railway of Can-

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Are American Railroads Overcapitalized? Alba B. Johnson. A comparison of conditions in Europe and America. 3500 w. Ry Age Gaz—Aug. 15, 1913. No. 44401.

Conservation

Report of Committee on Conservation of Natural Resources. Report for the Dominion of Canada, considering the planting and reforestation, prevention of fires from railways, coal resources, peat, natural gas, etc. 2500 w. Bul Am Ry Engng Assn—Feb., 1913. No. 40402 N. Convention

Traveling Engineers' Association. Report of the Chicago convention, Aug. 12-15, with abstracts of papers read. 10000 w. Ry Age Gaz-Aug. 22, 1913. 44539.

American Association of Railroad Superintendents. Report of discussions on car efficiency and train movement, inter-change rules and handling of explosives.

Dissolution

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4000 w. Ry Age Gaz-Aug. 29, 1913. No. 44807.

Traveling Engineers' Convention. Report of the meeting, with abstracts of committee reports and papers. 15000 w. Ry Age Gaz (Mech Ed)—Sept., 1913. No. 44955 C.

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The Union Pacific Plan as Approved. Gives the final decree of the court in the Union Pacific-Southern Pacific, and reasons for approving. 2000 w. Ry Age Gaz—July 4, 1913. No. 43476.

Dutch East Indies

State Railroads of the Dutch East In-D. C. Alexander, Jr. Extracts from a Consular Report giving information concerning the railroads on the islands of Java and Sumatra. 3000 w. Ir Age—Dec. 5, 1912. No. 38041 C.

Education

A Short Course in Railway Civil Engineering. C. C. Williams. Gives a brief outline of courses offered in railway engineering at the University of Colorado. 3500 w. Bul Soc for Pro of Engng Ed— May, 1913. No. 44826 N.

University of Cincinnati Co-operative Course in Railway Engineering. Describes these courses which have been in operation a number of years, discussing results. Ills. 1800 w. Ry Age Gaz—Aug. 15, 1913. No. 44408.

Moving Pictures in Railway Educational Work. D. C. Boy. An account of the educational work of the Central of Georgia R. R. Mr. Pendergast explained views illustrating the subject of fuel economy and proper locomotive firing. Discussion. 7200 w. Pro S & S W Ry Club—May, 1913. No. 44375 C.

England

The Cromford and High Peak Railway. An illustrated account of one of the most elevated lines in England, its engineering features, equipment and history. 3000 w. Engr, Lond—Nov. 22, 1912. No. 38036 A.

Examinations

Civil Service Examination for Positions in Railway Valuation. Information concerning the positions to be filled and the requirements. 3300 w. Ry & Engng Rev—June 21, 1913. No. 43153.

Forests

Mountain Forests and Railways (Gebirgswälder und Eisenbahnen.)—F. X. Burri. A study of the interrelation on the protection afforded by the forests, the ready marketing of forest products, and the damage from denuded hillsides. Ills. Serial. 1st part. 1600 w. Schweiz Bau—Feb. 15, 1913. No. 40529 D.

France

Notes on French Railway Practice. Henry W. Jacobs. Information based on a visit to the locomotive and car repair shops of the Paris, Lyons & Mediterranean Ry. at Paris. 3000 w. Ry Age Gaz—Dec. 6, 1912. No. 38068.

See also Public Ownership, under Miscellany.

Germany

Impressions of German Railway Practice. Henry W. Jacobs. Remarks on the handling of locomotives at terminals, Remarks on the economizing of fuel and the care of employees. 2500 w. Ry Age Gaz-Jan. 3, 1913. No. 38794.

The Prussian-Hessian State Railways. W. J. Cunningham. Description and discussion of their management, service, rates, and financial results. Also editorial. 10000 w. Ry Age Gaz—April 25, 1913. No. 41638.

Great Western Ry.

Seventy-First Anniversary of Great Western Railway. Reviews the development of the system. Ills. 2500 w. Ry Gaz, Lond — June 6, 1913. 42882 A.

India

Development of the East Indian Railway. Lewis R. Freeman. Map, and illustrated account of the railway development. 2500 w. Ry Age Gaz—Aug. 1, 1913. No. 44116.

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METALLURGY, Coal and Coke.

Mexican Railways

An Engineer's Reminiscences of Mexican Railway Building. Max E. Schmidt. An account of characteristics of the country and people. Ills. 3000 w. Engineering Magazine—Aug., 1913. No. 43914 B.

The Railways of Peru. O. Sperber. Map and descriptive account of the railways. Ills. 1500 w. Ry & Engng Rev-July 26, 1913. No. 43937.

Public Ownership

Results of Public Ownership in France. Yves Guyot. From the Annual Financial Review of the N. Y. Times. Shows that the working is more costly than had been anticipated and the service unsatisfactory. 1800 w. Ry Age Gaz—Feb. 7, 1913. No. 39713.

Queensland

Sir Thomas Robinson on Queensland's Railways. From a paper read before the Royal Colonial Inst. Describes the development of the railways. 2000 w. Ry Gaz, Lond-Dec. 13, 1912. No. 38387 A.

Railroad Contracts

MISCELLANY

Waste

Railroad Contracts

How to Start on a Railroad Contract. Daniel J. Hauer. Discussion of methods to follow. 3000 w. Con Rec-Sept. 10, 1913. No. 45066.

Railway Museum

A Visit to the Railway Museum in
Berlin. Henry W. Jacobs. Illustrated
account of the exhibits and their value
for instruction. 1200 w. Ry Age Gaz—
Dec. 20, 1912. No. 38342.

Regulation

The Limitations of Regulation. Editorial review of the Interstate Commerce Commission's report on its New England situation investigation. 2200 w. Ry Age Gaz—July 18, 1913. No. 43795.

Review of 1912

Railways. Reviews the construction during 1912. 5000 w. Engr, Lond-Jan. 8, 1913. No. 39168 A.

Storekeepers' Assn.

Railway Storekeepers' Association. Report of the convention at Chicago, with papers, reports, and business transacted. 1500 w. Ry Age Gaz—May 23, 1913. No. 42357.

Waste

Wasting a Million a Day. M. Gesundheit. Considers the need of efficiency engineering methods in the conduct of our railroads. Ills. 4500 w. Cassier's-July, 1918. No. 43848.

STREET AND ELECTRIC RAILWAYS

Accident Prevention

Berlin

Accident Prevention

Accident Prevention in Boston. Edward Dana. Explains the campaign of education to prevent street car accidents. Ills. 2500 w. Elec Ry Jour—Jan. 11, 1913. No. 39109.

Accidents

Successful Methods of Preventing Accidents. Arthur G. Rippey. Abstract of a paper read before the Iowa Elec. Ry. Assn. Discusses methods of preventing accidents on city and interurban railways. 4000 w. Elec Ry Jour—April 26, 1913. No. 41678.

Accounting

Statistical Units Used in Analysis of Electric Railway Accounts. James A. Emery. Abstract of paper read before the Am. Elec. Ry. Assn. Reviews the advantages and disadvantages of the various units. 3000 w. Elec Ry Jour—Oct. 16, 1913. (Daily Ed.) No. 45926.

Accumulator Cars

The Introduction of Accumulator Motor Traction on the Lines Mülheim-Ruhr (Heissen)—Osterfeld-Nord and Mülheim-Ruhr (Heissen)—Hattingen, and Notes on the Question of the Economy of Motor Traction (Die Einführung des Accumulator-Triebwagenbetriebes auf den Strecken Mülheim-Ruhr—Heissen—Osterfeld-Nord u. Mülheim-Ruhr—Heissen—Hattingen und Beitrag zur Frage der Wirtschaftlichkeit des Triebwagenbetriebes). E. Borghaus. Line construction, cars and service rendered. Ills. 6000 w. Glaser's Ann—Aug. 15, 1913. No. 46010 D.

Accumulators

A Storage Battery Train in New York. Report of a demonstration run between the Pennsylvania passenger station and Long Beach, L. I., with description of the cars and their equipment. Ills. 1200 w. Tram & Ry Wld—Nov. 14, 1912. No. 37803 B.

The Stepless Storage Battery Car. Illustrated description of a center-entrance four-wheel car of ingenious design on the New York Railways. 2000 w. Elec Ry Jour—Nov. 23, 1912. No. 37778.

Accumulator Traction

See same heading, under RAILWAY ENGINEERING, Motive Power and Equipment, and Electric Traction, under STREET AND ELECTRIC RAILWAYS.

Australia.

The Electrification of the City and Suburban Roads of Melbourne (Die Elektrisierung der Stadt- und Vorortbahnen von Melbourne). G. Brecht. A comprehensive description of the changes. Map. 5000 w. Elek Kraft u Bahnen—Feb. 14, 1913. No. 40565 D.

The Tramways of Sydney, New South Wales. C. O. Burge. Brief illustrated description of the system in use. 2000 w. Tram & Ry Wld—Nov. 14, 1912. No. 37800 B.

Automotrice

The Gasoline-Electric Automotrice. Francis E. Drake. Reviews the development of these self-propelled passenger cars. Ills. 1500 w. Elec Jour—Jan., 1913. No. 39440.

Axles

Breaking of Car-Wheel Axles. A. A. Blackburn and H. Vernon. Describes the various causes to which the breaking of steel axles are attributed and the means adopted in the effort to overcome the trouble. Ills. 3500 w. Tram & Ry Wld—Nov. 14, 1912. No. 37801 B.

See also Wheels, under STREET AND ELECTRIC RAILWAYS.

Bearings.

Railway Motor Bearings and Their Care. W. E. Johnson. Consideration of design and material, machinery and fitting, babbitting and oil grooving to obtain satisfactory results. Ills. 3500 w. Elec Trac—March, 1913. No. 40717.

Berlin

Berlin Means of Communication. Illustrates and describes present traffic arrangements and some proposed improvements. 3500 w. Tram & Ry Wld—Feb. 6, 1913. No. 40118 B.

The Opening of the Spittelmarkt-Alexanderplatz Line of Berlin's Elevated and Subway (Zur Eröffnung der Strecke Spittelmarkt-Alexanderplatz der Berliner Hoch- und Untergrundbahn). G. Kemman. Description, plans, profile, equipment and construction of this new line. Ills. 4000 w. Elek Kraft u Bahnen—Aug. 4, 1913. No. 44684 D.

Notes on the Electrification of Berlin's Local, Circle and Suburban Lines (Betrachtungen zur Elektrisierung der Berliner Stada-, Ring- und Vorortbahn-

Boston Elevated Carhouses

en). Ph. Pforr. Brief outline of proposed work. 1600 w. Elek Kraft u Bahnen— Nov. 14, 1912. No. 88469 D.

Boston Elevated.

Recent Improvements on the Boston Elevated System. Illustrated description of extensions of the lines since the completion of the Cambridge subway. 5000 w. Elec Ry Jour—March 1, 1913. No. 40283.

Recent Improvements of the Boston Elevated System. A continuation of the description, including the new office building, the new Stadium station, etc. Ills. 2500 w. Elec Ry Jour—March 8, 1913. No. 40376.

See Cars, under STREET AND ELECTRIC RAILWAYS.

Brakes

The New York City Brake Order. J. N. Dodd. Report of tests and opinions in regard to the order that all passenger cars weighing more than 25,100 lbs. be equipped with air brakes. 4000 w. Elec Ry Jour—Sept. 13, 1913. No. 45132.

Buenos Aires
Traffic Problems in Buenos Aires. Illustrated description of the underground railway, explaining the conditions which made it a necessity. 1200 w. Engr, Lond—Nov. 15, 1912. No. 37831 A.

Cable Laving

Cable Installations of City Railways (Die Kabelführung städtischer Schnellbahnen). Herr Brugsch. Examples of electric cables for street, subway and elevated tracks. Ills. 2600 w. Elek Kraft u Bahnen—July 14, 1913. No. 44681 D.

California

First Section of New California System. Rudolph W. Van Norden. Illustrated detailed description of interurban electric lines which will connect Sacramento Valley; with tidewater. 6500 w. Elec Trac—Feb, 1913. No. 39891.

Canada

The Windsor, Essex and Lake Shore Rapid Railway. Illustrated description of a single-track line in Ontario, its construction, maintenance and operation. 2000 w. Can Engr—Dec. 12, 1912. No. 38273.

Notes on the Windsor, Essex and Lake Shore Rapid Railway. Maintenance records are given for Canada's first singlephase railway. Ills. 2000 w. Elec Ry Jour-Nov. 30, 1912. No. 37971.

Car Design

Recent Developments in Street Car Design. Illustrates and describes recent types, most of them having a center entrance. 3000 w. Ry & Engng Rev—Dec. 14, 1912. No. 38225.

Car Equipment.

Maintenance of Electrical Equipment of Cars in Brooklyn. Describes recent improvements made in the maintenance of motor and control equipments. Ills. 5500 w. Elec. Ry Jour—March 15, 1913. No. 40686.

Car-Ferries

See Ferries, under MARINE AND NAVAL ENGINEERING.

Car Heating

Heating and Ventilating Cars. A. L. Bostwick. Briefly considers methods in use in ten of the important cities of the United States. 1500 w. Munic Jour—Feb. 6, 1913. No. 39676.

Thermostat Heat Regulator Test. Report of tests made by the Chicago Rys. Co., describing apparatus, methods, etc. 3000 w. Elec Trac—July, 1913. No.

43811.

Carhouses.
Pierce Street Carhouse of the Omaha & Council Bluffs Railway. Illustrated description of a double-deck carhouse of reinforced concrete construction. 2500 w. Elec Ry Jour—Feb. 8, 1913. No. 39742.

Elec Ry Jour—Feb. 8, 1913. No. 39742.
The Derby Carhouse of the Connecticut Company. Illustrated description of a structure for storing cars, built on the bed of a diverted stream and designed to exert the minimum weight upon its foundations. 2500 w. Elec Ry Jour—Feb. 22, 1913. No. 39988.

Fond du Lac Avenue Carhouse of the Milwaukee Electric Railway & Light Company. Detailed account of a modern carhouse. Ills. 2200 w. Elec Ry Jour—

March 15, 1913. No. 40687.

Luzerne Carhouse of the Philadelphia Rapid Transit Company. Illustrated description of a unit-type reinforced concrete structure for 336 cars, with separate buildings for stores, sand handling heating and transportation purposes. 1800 w. Elec Ry Jour—June 28, 1913. No. 43317.

New Headquarters Carhouse of the Union Street Railway. Illustrates and describes interesting features of a recently completed structure. 2500 w. Elec Ry Jour—Aug. 23, 1913. No. 44700.

Car House, Shop and Office Building at Dayton. Illustrated description of Oakwood Street Ry's station. 2000 w. Elec Trac—Sept., 1913. No. 45512. Old and New Carhouses at Berlin, Ger-

Old and New Carhouses at Berlin, Germany. Illustrated descriptions showing recent changes in construction standards. 1200 w. Elec Ry Jour—Oct. 4, 1913. No. 45713.

See also Shops, under STREET AND ELECTRIC RAILWAYS.

Car Lighting City Service

Car Lighting

Economic Lighting of Street Cars. S. G. Hibben and E. M. Smith. Commending the Mazda lamp Alba-shade equip-ment. 1200 w. Elec Jour—June, 1913. No. 43224.

Modern Practice in Street Railway Illumination. S. G. Hibben. Reviews past and present practice in street car lighting, and the recent introduction of standard tungsten lamps with downward reflecting shades. Ills. 3500 w. Ill Engng Soc—Sept., 1913. No. 46375 N.

Cleveland Center-Entrance Trail Car. Illustrated description of cars recently put in service. 1200 w. Elec Ry Jour-Nov. 30, 1912. No. 37972.

New Demonstration Car for Chicago allways Company. Illustration, with Railways Company. brief description. 1200 w. Elec Trac-

Jan., 1913. No. 39222.

New Cars for Vienna Street Railways
(Neue Motorwagen bei den städtischen
Strassenbahnen in Wein.) Ludwig Spängler. Dimensions and plans of new single- and double-deck cars and trailers. Ills. 2200 w. Elek Kraft u Bahnen— Jan. 24, 1913. No. 40060 D. Single-Deck and Double-Deck Prepay-

ment Cars for Vienna. Illustrates and describes single-deck motor and trailer cars with separate exits and entrances, and a double-deck drop-platform car with one inside stairway to the upper deck. 1200 w. Elec Ry Jour—Aug. 2,

1913. No. 44137.

Plans of Double-Deck Cars and Automobile Omnibuses for the Vienna Street Railways (Entwürfe für stockhohe Triebwagen und Automobil-Omnibusse bei den Wiener städtischen Strassenbahnen). Ludwig Spangler. Dimensions and arrangements and comparisons with New York and Pittsburgh cars. Ills. 6600 w. Elek kraft u Bahnen-Sept. 4, 1913. No.

An Improved Type of Articulated Car. Illustrates and describes a novel design developed by the Boston Elevated Ry. 1000 w. Elec Ry Jour—March 29, 1913.

No. 40948.

Center-Entrance Cars for Brooklyn. Illustrated detailed description of the construction and equipment of 100 cars for the Brooklyn Rapid Transit Co. 3000 w. Elec Ry Jour—April 19, 1913. No. 41363.

The Electric Cars on the Lines of the Noord-Zuid-Hollandsche Tramway Company in Haarlem (De motorwagens voor de lijnen der Noord-Zuid-Hollandsche Tramwegmaatschappij in Haarlem). W. J. Burgersdijk. Details of overhead con-

struction of these cars. Ills. 1900 w. De Ingenieur—May 3, 1913. No. 42166 D. Petrol-Electric Tramcars. Illustrated description of the Tilling-Stevens cars for the London County Council. 1200 w. Tram & Ry Wld-June 5, 1913. No.

New Double-Deck Cars for Pittsburgh. Illustrated detailed description of cars recently purchased. 2500 w. Elec Ry Jour-May 31, 1913. No. 42622.

Recent American Street Railway Cars (Neuere Amerikanische Strassenbahn-wagen). H. Nordmann. Description of the new center-entrance and doubledecked cars in New York and Pittsburgh. Ills. 11000 w. Elek Kraft u Bahnen— May 24, 1913. No. 43048 D. New Light-Weight Express Cars of the

Bay State Street Railway. Illustrated detailed description of new rolling stock to provide maximum capacity. 1500 w. Elec Ry Jour—Sept. 27, 1913. No. 45501.

Self-Propelled Cars. Illustrates and describes the present commercial forms of gasoline, gas-electric, and storage-battery cars, giving statistics of performance. 9000 w. Elec Ry Jour—Oct. 4, 1913. No. 45721.

A Car Designed for the New Subway. Illustrated description of a design claiming to give 42% more seats and 100% more standing room. 600 w. Sci Am— Oct. 4, 1913. No. 45612.

Design of City Cars. Illustrates and describes recent modifications due to the adoption of the prepayment system for fares, and a tendency to use steel. 6500 w. Elec Ry Jour—Oct. 4, 1913. No. 45716.

Los Angeles Center Entrance Cars. E. L. Stephens. Illustrates and describes a new type of car remodeled from the older types. 700 w. Elec Jour—Oct., 1913. No. 46322.

See also Accumulators, under STREET AND ELECTRIC RAILWAYS.

Chicago

Service Equipment and Operation in Chicago. Abstract of a report by the Board of Supervising Engrs. Considers improvements in service. 3500 w. Elec. Ry Jour—Aug. 16, 1913. No. 44473.

City Service

Train Operation for City Service. Observations on a series of tests by the Public Service Railway of New Jersey to determine whether the operation of two-car trains is desirable. 2000 w. No. Elec Ry Jour-July 5, 1913. 43463.

Train Operation in City Service. F. M. Loud. Explains conditions in Newark, N. J., and the solution of the problem.

Cleveland, O.

Electric Traction

Ills. 2000 w. Elec Jour—Oct., 1913. No. 46323.

Report on the Joint Committee on Train Operation for City Service. Abstract of a report read before the Am Elec. Ry. Assn. 1700 w. Elec Ry Jour— Oct. 15, 1913. (Daily Ed.) No. 45905.

Elec. Ry. Assn. 1700 w. Elec Ry Jour—Oct. 15, 1913. (Daily Ed.) No. 45905.

Urban Passenger Transport. J. B. Hamilton. Read before the Munic. Tram. Assn., Sheffield. Discusses cost of operation of tram cars and motor omnibuses in the towns of the United Kingdom. 5000 w. Elect'n, Lond—Oct. 3, 1913. No. 45841 A.

Urban Passenger Transport. J. B. Hamilton. Read before the Munic. Tram. Assn. Deals with the respective revenues and expenses from working tramways and motor omnibuses in large towns. Discussion and reply. 17000 w. Tram & Ry Wld—Oct. 16, 1913. No. 46241 B.

Cleveland, O.
Electric Power in Cleveland. Illustrated account of changes with a description of the 60-cycle, 1500 kw. rotary converters. 3000 w. Elec Ry Jour-

April 5, 1913. No. 41106.

Composite Rails

Composite Rail Laying on Chicago Street Railways; the Economics of Composite Rails. Description and discussion. Ills. 800 w. Engng & Con—Dec. 4, 1912. No. 38051.

Congestion

Financial Aspects of the Relief of Congestion by the Construction of Subways and Viaducts. Charles S. Sergeant. Abstract of paper read before the Am Elec Ry Assn. 1600 w. Elec Ry Jour—Oct. 16, 1913. (Daily Ed.) No. 45925.

Connecticut Lines

Traffic Improvements of the Connecticut Company. An illustrated account of the consolidation of various trolley lines, with an analysis of the financial and operating results secured. 6000 w. Elec Ry Jour—Aug. 16, 1913. No. 44472.

Constantinople

The Future Electric Railway in Constantinople and Its Proposed Route Along the European Banks of the Bosphorus (Die zukünftige elektrische Schnellbahn für Konstantinopel und seine am europäischen Ufer des Bosphorus gelegenen Vororte). E. Brugsch. Description of proposed line. Ills. 3300 w. Elek Kraft u Bahnen—Nov. 4, 1912. No. 38467 D. Construction

Supporting an Electric Railroad on the Edge of a Side Hill. Walter Loring Webb. Illustrated description of the method adopted at Oil City, Penn., to solve a vexing engineering problem. 900 w. Eng News—Feb. 6, 1913. No. 39706.

Control

The Control of Electric Trains and Tramcars. Considers the merits and demerits of some of the systems in common use. 3000 w. Engr, Lond—Jan. 10, 1913. No. 39268 A.

Recent Developments in Railway Control. F. E. Wynne. Abstract of paper before the Cent. Elec. Ry. Convention. Describes the "P K" equipment and operation, field-control operation, and states advantages. 2000 w. Elec Ry Jour—July 5, 1913. No. 43464.

See same heading, under RAILWAY ENGINEERING, Conducting Transportation.

Controllers

Pneumatically-Operated Drum Controllers. A. J. Hall and L. G. Riley. Brief descriptions of types, with detailed description of the "P. K." type controller used on the stepless cars of the New York railways. Ills. 2200 w. Elec Jour—Oct., 1913. No. 46325.

Costs

Electric Railway Costs. John B. Sparks. Suggests that all power costs be entirely separated from transportation expenses, and presents results from three railways. 2500 w. Elec Ry Jour—June 14, 1913. No. 42848.

See Pension Systems, under INDUSTRIAL

ECONOMY.

Dynamotor Compressor

The Dynamotor-Compressor. Ralph E. Ferris. Illustrates and describes the machine, explaining how it performs the duties for which two or three machines were formerly required. 2500 w. Elec Jour—Oct., 1913. No. 46330.

Electric Traction

Heavy Electric Traction on the Continent. Summarizes recent electrification work of the various continental governments. 2500 w. Elec Ry Jour—Jan. 4, 1913. No. 38828.

Electrification of the Berlin City Circular and Suburban Railways. The official report of the Parliamentary Committee. 3000 w. Ry Gaz, Lond—Jan. 3, 1913. Serial. 1st part. No. 39144 A.

The Electrification of Melbourne Railways. Information from the last report by Mr. Charles Merz, dealing with the system of electric traction most suitable for the Melbourne railways and the financial results of their conversion to electric working. Map and ills. 5000 w. Tram & Ry Wld—Dec. 12, 1912. No. 38867 B.

Some New Traction Methods (Eenige nieuwere wizen van tractie). E. F. Suringer. Recent developments in accumulator cars, and in oil-driven generator cars.

Hamburg Europe

Ills. 7000 w. De Ingenieur—March 8, 1913. No. 41504 D. See also Electrification, under RAIL-

See also Electrification, under RAIL-WAY ENGINEERING, Motive Power and Equipment.

Lurope

Discussion on "Some Impressions of the Electric Traction Situation in Europe." The paper by C. E. Eveleth is discussed at Schenectady, N. Y., May 17, 1912. 4500 w. Pro Am Inst of Elec Engrs— Nov., 1912. No. 37901 F.

Express Service

Electric Express Service at Boston. Illustrated description of trolley express and freight facilities of commercial importance. 1500 w. Elec Ry Jour—Dec. 21, 1912. No. 38379.

Express and Freight Traffic in Providence, R. I. Illustrated account of the methods and description of special facilities for the service. 2000 w. Elec Ry Jour-March 29, 1913. No. 40947.

Fare Collection

Advantages and Disadvantages of Platform Fare Collection. Alderman S. Flint. Read before the Munic. Tram. Assn., Sheffield. Considers the subject in relation to conditions in England. 3000 w. Elect'n, Lond-Oct. 3, 1913. No. 45839 A.

Fares Fare Accounting. Letters from accounting officials discussing present practice and opportunities for improvement. 7500 w. Elec Ry Jour-Oct. 4, 1913. No. 45718.

Feeders

Interconnected Systems Feeding Railway Load. Illustrated description of the network of Waterbury-New Britain system of Connecticut Company supplied from three hydroelectric and two steam stations. 2500 w. Elec Wld—March 1, 1913. No. 40256. Feeder Tests

Feeder Tests on the San Diego Electric Railway. H. Macnutt. Describes apparatus and methods used. Ills. 900 w. Elec Ry Jour-July 26, 1913. 43944.

Field Control

Field Control Equipment of the Michigan United Traction Company. E. A. McElheny. Describes the motors and control equipment. 1800 w. Elec Jour— Oct., 1913. No. 46334.

Finance

Reserves and Operating Conditions of Electrical Railways (Rücklagen und Betriebsergebnisse der elektrischen Bahnen). Arthur Ertel. Comparing reserves, amortization and credit of private and public roads. 5500 w. Elek Kraft u Bahnen —Nov. 24, 1912. No. 38473 D. France

An Electric Railway in the French Pyrenees. Alfred Gradenwitz. trated detailed description of an interesting mountain railway. 4500 w. Elec Rev, Lond—Aug. 8, 1913. No. 44445 A.

Freight

Report of the Committee on Express and Freight Traffic. Abstract of report before the Am. Elec. Ry. Assn. Discusses questions in connection with freight and express business. 2500 w. Elec Ry Jour—Oct. 16, 1913. (Daily Ed.) No. 45923.

Transportation of Freight. Deals with all phases of freight traffic. Ills. 12000 w. Elec Ry Jour—Oct. 4, 1913. No.

45719.

Funeral Cars

Recent Funeral Cars. Illustrates and describes cars used in Philadelphia and in Milwaukee. 1000 w. Elec Ry Jour-Dec. 7, 1912. No. 38094.

Grades

Grade Reduction on Street Railways. Carl H. Reeves. Illustrates and describes difficult work at Seattle, Wash. 2500 w. Eng News-Jan. 9, 1913. No. 38950.

Great Britain

Tramways of the United Kingdom. A J. Lawson. An analysis of the financial position of the tramways, examining capital expenditure, cost of construction and equipment, traffic revenue, appropriations, rates, etc. 3500 w. Elect'n, Lond—Aug. 8, 1913. Serial, 1st part. No. 44447 A.

Hamburg

The Hamburg Elevated and Under-ound Railway. Illustrations and inground Railway. formation concerning the provision made for local passenger traffic. 900 w. Am Sup-Jan. 11, 1913. No. 39106.

Hamburg Subway and Elevated Railway. Map of the route and illustrated description of the character of construc-tion adopted for the way and stations. 1800 w. Elec Ry Jour-March 8, 1913.

No. 40377.

Shops and Carhouses of the Hamburg Rapid Transit System. Illustrates and describes the constructional and maintenance features of these buildings. 2500 w. Elec Ry Jour-March 15, 1913. No. 40684.

Power Equipment of the Hamburg Rapid Transit System. Brief illustrated description of the power station, substations, and transmission for the 800-volt d.c. operation of this elevated and underground railway. 2000 w. Elec Ry Jour

—July 5, 1913. No. 43462.

Hamburg Elevated & Subway System.

This fourth and concluding article de-

High-Tension

Interurban

scribes the principal features of the cars, schedules, rates of fare, and the growth of traffic. Ills. 1500 w. Elec Ry Jour—Aug. 2, 1918. No. 44136.

High-Tension

High-Tension Continuous Current Traction. L. Gratzmuller. (Abstract.) Considers this system and its possibilities. 3500 w. Elect'n, Lond—May 30, No. 42768 A. 1913.

High-Tension Continuous raction. L. Gratz-Muller. Continuous Current Read at Joint Meeting in Paris. Discusses this system and its possibilities of development. 9500 w. Engng-June 20, 1913. No. 43390 A.

Holland

A 1200-Volt D. C. Line in Holland. Illustrated description of the Leyden-Katwyk-Noordwyk railway. The entire overhead construction is of copper or bronze because of atmospheric conditions. 1200 w. Elec Ry Jour-Jan. 25, 1913. No. 39411.

Inspection

Inspection of Railway Apparatus. L. E. Schumacher. Outlines methods of inspection. 2200 w. Elec Jour—Oct, 1913. No. 46328.

Instructions

Instruction of Trainmen on the Houston Electric. Describes the schoolroom equipment and course of instruction to prospective trainmen. Ills. 2000 w. Elec Ry Jour-Sept. 27, 1913. No. 45500.

Interurban

Belt Lines of Illinois Traction System. Illustrates and describes engineering features of the four belt lines recently completed, at Decatur, Springfield, Edwardsville, and Granite City. 2000 w. Elec Ry Jour—Nov. 16, 1912. No. 37607.

The Henderson Extension of the Evansville Railways. Illustrated description of the engineering and operating features of a new line at Henderson and Owensboro, Ky., connecting these cities with Evansville, Ind. Describes the car ferry

and the rolling stock. 1500 w. Elec Ry Jour—Nov. 23, 1912. No. 37777. Nashville-Gallatin Interurban Railway. Illustrated description of new 1200-volt system through Tennessee blue grass dis-2000 w. Elec Trac-Dec., 1912. trict.

No. 38546.

New 1200-Volt Line Between Nashville and Gallatin, Tenn. Describes the longinterurban railway in Tennessee, which shows novel features in track, repair shops, substation, cab signal system and rolling stock. Ills. 2500 w. Elec Ry Jour—Aug. 2, 1913. No. 44135.
Engineering and Operating Features

of the Tri-City Railway, Davenport, Ia.

Illustrated description of an inter-state street railway. Also a new 30-mile 1200-volt interurban line. \$500 w. Elec Ry Jour—Dec. 28, 1912. No. 38689. New Waterloo-La Porte Interurban

Line. Illustrated description of a 20-mile extension of the Waterloo, Cedar Falls &

Northern Ry. 3500 w. Elec Trac—May, 1913. No. 42232.

Possibilties of Increasing Profits on Interurban Tramways. E. H. Eduardes. Read before the Light Rys. Assn. Discrete Control of the Control of the Control of the Light Rys. Assn. Discrete Control of the Light Rys. Assn. Discrete Control of the Control cusses how tramway costs can be reduced and receipts increased. 2800 w. Elect'n, Lond — June 20, 1913. 43372 A.

New 40-Mile Extension of the Water-loo, Cedar Falls & Northern Railway. Illustrated account of a 600-volt d.c. interurban line in Iowa. 2500 w. E Ry Jour—July 19, 1913. No. 43830.

Determination of Probable Operating Revenue. Louis E. Fischer. An analytical study of the probable operating revenue of a proposed interurban railway, based upon an examination of results obtained from existing lines. 5500 w. Elec Ry Jour—Aug. 23, 1913. No. 44701.

Power for Interurban Railroad. Illustrated description of electricity developed by steam turbines at Fraser, Ia., used for running trains, operating mines, and driving industrial plants. 1800 w. Prac Engr, Chicago—Aug. 15, 1913. No. 44419.

Quick Change-Over from 12000 Volts to 33,000 Volts. Illustrated account of work on lines in Indiana. 1000 w. Elec

Wld—Aug. 23, 1913. No. 44565. The Kansas City, Clay County, & St. Joseph Railway. Illustrated detailed description of an important electric railway recently completed in Missouri. 7500 w. Elec Ry Jour—Aug. 9, 1913. No. 44286. Building a 1200-Volt Electric Railway. Robert P. Woods. Illustrated review of

the problems of design and construction in the building of the Kansas City, Clay County and St. Joseph Ry. 4500 w. Eng News—Oct. 9, 1913. No. 45796 C. Oakland, Antioch & Eastern Railway. Ralph W. Van Norden. Illustrates and

describes interesting features of this new interurban line in California.

Elec Trac—April, 1913. No. 41329.
Oakland, Antioch & Eastern Railway.
C. E. Heise and G. B. Kirker. Illustrated description of a high class interurban electric railway for fast transportation between San Francisco and Sacra-2000 w. Elec Jour-Oct., 1913. mento. No. 46317.

Oakland, Antioch & Eastern Ry. Illustrated description of an electric inter-

Italy

Operation

urban railway in California, built for high speed and heavy traffic. 1600 w. Ry & Engng Rev-Oct. 25, 1913. No. 46220.

The Giovi Line and Chiapella Station. Reviews briefly the use of electricity for traction in Italy, and illustrated description of the electric locomotives. 1500 w. Engr, Lond—Aug. 29, 1913. Serial, 1st part. No. 45041 A.

Load Factor

The Limiting Load Capacity of City Railways (Die Grenzen der Leistungs-Stadt-Schnellbahnen). von Herrn Brugsch and Briske. General discussion of the load factor in railway Charts. Elek operations. 2600 w. Kraft u Bahnen-Sept. 24, 1913. No. 46092 D.

London

Central London Railway Extension to Liverpool Street. Plans and illustrated description, with particulars of the work. 2500 w. Engr, Lond-Nov. 29, 1912. No. 88133 A.

Increased Facilities in London's System Since the Introduction of Electric Power (Betriebsverstärkungen auf dem Bahnnetz des Londoner Innenringes seit Einführung elektrischer Zugkraft). G. Kemmann. Description of London traffic facilities. Maps. Serial. 1st part. 5500 w. Elek Kraft u Bahnen—Nov. 4, 1912. No. 38468 D.

London's Early Local Railways. Brief review of their history. 2000 w. Engr, Lond—Jan. 10, 1913. No. 39269 A.

London's Underground Electric Railways. Reviews the past year's results of the electric railway companies of London. 2500 w. Ry Gaz, Lond—March 7, 1913. No. 40706 A.

The Bus v. Tram Controversy, and Other Aspects of the London Traffic Prob-Discussion on whether trains or buses offer the better facilities for passenger transportation in London. Map. 10000 w. Soc of Engrs—Feb. 3, 1913. No. 40389 N.

Lubrication

Brooklyn Car Equipment Lubrication. Deals with lubrication changes, the storing and distributing the lubricant in the motors, etc. Ills. 2500 w. Jour—Dec. 7, 1912. No. 38093. Elec Ry

Maintenance

A System of Maintenance Records for Electric Railway Equipment. T. M. Childs. Gives systems for records of oiling, inspection, and other reports. Elec Jour-Oct., 1913. No. 1000 w. 46333.

Management

Scientific Management Applied to Electric Railways. Deals with efficiency engineering methods employed by several companies to obtain greater operating economies. 12000 w. Elec Trac—Sept., 1913. No. 45506.

Scientific Methods in Electric Railway Promotion. John A. Meeker. Outlines the principles required for the successful financing of a project. 1000 w. Elec Trac—Sept., 1913. No. 45508. Scientific Management on Chicago

Describes results Railways Company. secured through efficiency engineering methods. 2000 w. Elec Trac—Sept.,

1913. No. 45507.

Mine Effects

See same heading, under CIVIL ENGI-NEERING, Municipal.

Maintenance Costs of Old and New Railway Motors. J. C. Thirlwall. A comparison of the costs of operating old and modern types of motors in city and 2500 w. interurban service. Elec Ry Jour-Sept. 27, 1913. No. 45502.

Newcastle, Eng.

Newcastle-upon-Tyne Tramways Ex-tensions. J. McKellar. Read before the Munic. & Co. Engrs. Describes the method of construction and maintenance work. 3000 w. Surveyor-May 16, 1913. No. 42534 A.

New South Wales

Sydney City and Suburban Railways. Map and description of the conditions which make the problem difficult. 2500 w. Engng—May 16, 1913. No. 42539 A.

New York, Westchester and Boston
The Westchester Railway Lines and Structures. First of two articles illustrating and describing an electric suburban railroad built for heavy traffic. 2000 w. Eng News — June 5, 1913. Serial. 1st part. No. 42697.

Oil System

New Oil Storage and Distribution System of Chicago Railways. Illustrated description of a central storage tank, which delivers to tank cars, and then to a novel 1500 w. Elec Trac-Jan., 1913. No. 39223.

Operating Expense

Estimating Operating Expense and Cost of Construction. Louis E. Fischer. Analytical study of the probable operating expense and cost of construction of a pro-posed electric interurban railway. 7500 Elec Ry Jour-Sept. 6, 1913. No. 45004.

Operation

A comparison of Cars and Trains for Street Railway Service. Committee re-

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Power Stations

port at the recent Chicago convention of electric railway associations dealing only with city service. 2200 w. Eng News-Nov. 28, 1912. No. 37941.

Construction of the Portland, Eugene
Mark Woodruff. Map & Eastern Ry. Mark Woodruff. and detailed description of electric railway to give transportation facilities to the Willamette valley of Oregon. 2000 w. Ry & Engng Rev—May 10, 1913. No. 41975.

The Oregon Electric Railway. Illustrated description of a line equipped with 1200-volt apparatus operating be-tween Portland and Eugene, a distance of 122 miles. 2500 w. Elec Ry Jour— June 14, 1913. No. 42847.

First Electric Railway System in Pan-Illustrates and describes interesting features of recently completed lines. 2500 w. Elec Trac-Aug., 1913. No. 44439.

Parcel Carrying

Bradford City Tramways Parcel De-Illustrated detailed description of the system and its uses. 1600 w. Tram & Ry Wld - May 8, 1913. No. 42277 B.

The Metropolitan Railway of Paris (Le Chemin de Fer Métropolitan de Paris). M. k. Godfernaux. Review of additions, improvements, rolling stock, plant equipment, etc. Il's. and plates. 16500 w. Rev Gén des Chemins de Fer—Oct., 1912. No. 37493 G.

Changes in the Paris Tramway System by the Compagnie Générale des Omnibus (La transformation des réseaux d'omnibus et de tramways de la Compagnie Générale des Omnibus de Paris). A. Bidault des Chaumes. Describes present features of the service. Ills. 4500 w. Génie Civil—Dec. 7, 1912. No. 38492 D. The Transformation in the Municipal Railway Systems of Paris (La Trans-formation du Réseau Municipal de

Tramways a Paris). A. Mariage. Part 1, gives an historical summary of the service from 1854 to 1910. Part 2, presents a complete study of the system under electrification. Ills. and Plate. 90 pp. Mem Soc Ing Civ de France—March, 1913. No. 43077 G.

Paving Maintenance

The Maintenance of Paving on Tramway Track as Affected by Section 28 of the Tramway Act, 1870. William C. Fenton. Read before the Munic. Tram. Assn., Sheffield. Discusses reasons for revision and objections to revision. 2500

Elect'n. Lond-Oct. 3, 1913. 45840 A

The Maintenance of Paving on Tramway Track as Affected by Section 28 of the Tramway Act, 1870. William C. Fenton. Deals with the present aspect of this question in England. Also discussion. 16000 w. Tram & Ry Wld—Oct. 16, 1913. No. 46240 B.

Peak Loads

Peak Loads

Review of Peak loads on Electric Power Plants. Edward P. Burch. Brief consideration of their cause, reduction, and economical handling. 3000 w. Elec Trac-Sept., 1913. No. 45510.

Philadelphia

Rapid Transit Report on Philadelphia. Gives recommendations of A. Merritt Taylor in regard to the construction of subway and elevated lines at a total cost of about \$60,000,000. Map. 2500 w. Elec Ry Jour-Aug. 9, 1913. No. 44287. **Power Generation**

Power Generation and Transmission. Illustrated review of recent changes in design and construction. 12500 w. Elec Ry Jour—Oct. 4, 1913. No. 45715. Report of the Committee on Power

Distribution. Abstract of report read before the Am. Elec. Ry. Engng. Assn. at Atlantic City, N. J. 4500 w. Elec Ry Jour—Oct. 14, 1913. (Daily Ed.) No. 45884.

Report of the Committee on Power Generation. Abstract of report before the Am. Elec. Ry. Assn. Suggests arrangement to protect power plants from shut-downs, and discusses matters related. 2500 w. Elec Ry Jour—Oct. 16, 1913. (Daily Ed.) No. 45924.

Power Plant

An Interurban Railroad Power Plant. G. D. Crain, Jr. Illustrated description of a plant at Louisville, Ky., which operates, in and around the city, electric lines with a total length of single track reaching 261.459 miles. 2500 w. Mfr's Rec-March 6, 1913. No. 40327.

Power Stations

Power-Generating Equipment on the Cleveland, Painesville & Eastern Rail-road. Illustrates and describes a re-cently consolidated system having novel features, and supplying power for lighting and industrial service as well as for cars. 2200 w. Elec Ry Jour-July 19, 1913. No. 43829.

Improvements in Power Station at Omaha, Neb. Illustrated description of the extension to the main generating plant of the Omaha & Council Bluffs Street Ry. Co. 2000 w. Elec Trac—Sept., 1913. No. 45509.

Power Plant of Springfield (Mass.) Street Railway Co. W. O. Rogers. Illus-

Providence, R. I.

trated description of a plant supplying electrical energy to operate about 175 miles of street railway. 600 w. Power
—Sept. 2, 1913. No. 44901.

Providence, R. I. Recent Improvements in the Electric Railway System of Providence, R. I. Illustrated account of improvements including the introduction of pay-as-youenter system, automatic block signals on single-track lines. and other features. Elec Ry Jour-July 12, 1913. 4500 w. No. 43690.

Rail Corrugation

Rail Corrugations. H. T. Wakelam. Read before the Inst. of Munic. & Co. Engrs. A discussion of the causes of this trouble. Ills. 7500 w. Surveyor— Dec. 13, 1912. No. 38392 A. Rail Corrugation. Editorial comment

with summary of opinions and conclusions in Great Britain as to the cause of

the trouble. 2200 w. Eng News—Nov. 28, 1912. No. 37942.

The Source of Corrugation in Rails (Die Ursache der Riffelbildung an (Die Ursache der Riffelbildung an Schienen). F. Martens. Describes tests and studies tending toward the theory of hard spots as the cause of corrugation. Ills. 3000 w. Stahl u Eisen-July 10, 1913. No. 44603 D.

Rail Grinding

Grinding Rails on Street Railways. Describes conditions of rails in Chicago and the methods employed for restoring a smooth-running surface. Ills. 2000 w. Eng News-Nov. 28, 1912. No. 37940. Railless

Rotherham Trolley 'Busses. Illustrates and describes features of interest in this omnibus system. 1500 w. Elec Rev, Lond-Oct. 25, 1912. No. 37286 A.

Traction Legislation. H. Examines in detail various Rail-less England. provisions in the bills introduced. Discussion. 4500 w. Elect'n, Lond-June 20, 1913. No. 43374 A.

Rails

Continuous Rail for Chicago Street Traction. An interesting story of a rush Ills. 2500 w. Sci Am Sup-

March 29, 1913. No. 40963. T-Rail in Paved Streets. R. C. Cram. Shows the connection between T-rail construction and types of paving. 3500 w. Elec Ry Jour—Sept. 6, 1913. No. 45001.

See Composite Rails, under STREET AND

ELECTRIC RAILWAYS.

Railway Economics Economics of the Cleveland Railway Situation as Developed in the 1913 Ar-bitration Decision. C. Nesbit Duffy. Abstract of a paper read before the Am. Elec. Ry. Assn. Reviews the questions Shop Practice

involved and reasons why the franchise plan did not prove successful. 4000 w. Elec Ry Jour—Oct. 15, 1913. (Daily Ed.) No. 45903.

Rapid Transit

Rapid Transit Development in Berlin and New York. Review of subway and elevated lines. Maps. 1500 w. Elec Ry Jour—Sept. 6, 1913. No. 45003.

Repair Shops Repair Shop of the New York, Westchester and Boston Railway. Illustrated description of the building and equipment for the maintenance of high-speed suburban cars of unusually large size and constructed of steel throughout. 4000 w. Elec Ry Jour-Dec. 14, 1912. No. 38207. San Francisco

Reports on San Francisco Conditions. Reports on traffic conditions and the future needs. 6500 w. Elec Ry Jour—Jan. 11, 1913. No. 39110.

Final Report on San Francisco. Concluding report of B. J. Arnold on transportation conditions in San Francisco.

with recommendations. 8500 w. Elec Ry Jour-May 10, 1913. No. 41972. San Francisco Municipal Railway. Official statement of the cost of construction and the operation. Map. 3000 w. Elec Ry Jour—Oct. 11, 1913. No. 45883.

Schedules

The Shortest Train Schedule for City Service Considering Train Lengths (Die Kürzeste Zugfolge für städtische Schnell-bahnen unter besonderer Berücksichti-gung der Zuglänge). W. Bethge. A series of charts outlining possible schedules on elevated, subway and street lines. 2200 w. Elek Kraft u Bahnen-April 14, 1913. No. 42155 D.

Seattle

Improvements to a Cable Road in Seattle. Notes upon the operating features of cable lines in streets with heavy grades. Electricity replaces steam for the cable drive. Ills. 1000 w. Elec Ry Jour—June 21, 1913. No. 43118. Sheffield, Eng.

The Tramway System of Sheffield. Illustrated detailed description and history of the development. 5000 w. Tram & Ry Wld—Sept. 11, 1913. No. 45293 B.

Shop Practice

Brooklyn Motor, Truck and Brakeshoe Improvements. Third article of a series on work of the Brooklyn Rapid Transit Co. Describes practice in reboring motor shells, types of bearings and brasses used, truck changes, etc. Ills. 2000 w. Elec Ry Jour—Jan. 18, 1913. No. 39228.

Repair Shop Practice at Portland, Ore. F. P. Maize. Illustrated description of new shops, their equipment and man-

Shops

South Carolina

2500 w. Elec Ry Jour-July agement. 26, 1913. No. 43943.

New Shops of Montreal Tramways Co. Illustrated description of Youville shops at Montreal, Que. 4000 w. Elec Trac—March, 1913. No. 40716.

Scientific Design of Carhouses and Shops. C. A. Neff and T. P. Thompson. Drawings and description of methods used in planning an electric railway maintenance plant. 3000 w. Eng Rec-March 15, 1913. No. 40641.New Paint Shop of the Detroit United

Illustrated detailed description of a shop of modern design. w. Elec Ry Jour-April 12, 1913. No.

41202.

Kenmore Shops of the Northern Ohio Traction & Light Company. Jay C. Lathrop. Illustrated description of the new car maintenance plant near Akron. 3500 w. Elec Ry Jour-Oct. 18, 1913. No. 46126.

Repair Shop Design and Operation. Illustrations, diagrams and description of recent designs of repair shops, discussing tendencies in shop practice. 6500 w. Elec Ry Jour—Oct. 4, 1913. No. 45717.

Recent Repair Shop Improvements at Minneapolis. Gives an illustrated description of new structures, with notes on present shop practice. 1500 w. Elec Ry Jour—Oct. 11, 1913. No. 45880.

Signaling

Contact Signaling for Electric Railways. Carl P. Nachod. Explains the advantages of a trolley contact system. 2000 w. Elec Trac—Dec., 1912. No. 38547.

Electric Signaling in the Case of Tramways (La Signalisation électrique en matière de Tramways) Paul Philippart. Requirements of service, some systems in present usage and especially the Samaia system. Ills. 6400 w. Soc Belge d'Elec—Jan, 1913. No. 41509 E.

Electric Railway Signaling. Describes the most recent developments in block signaling. Ills. 11500 w. Elec Ry Jour

signaling. Ills. 11500 w. Elec Ry Jour—Oct. 4, 1913. No. 45720.

Report of the Joint Committee on Block Signals for Electric Railways. J. M. Waldron, Chairman. Abstract of report before the Am Elec Ry Assn. 1500 Elec Ry Jour-Oct. 15, 1913. (Daily Ed.) No. 45904. Single Phase

Single-Phase and Direct-Current Railway Working. Editorial on the controversy in regard to the two systems of electric railway working; the decisions in different countries, and the divided opinion in Great Britain. 2000 w. Engng —Jan. 3, 1913. No. 39157 A.

Telephone Disturbances on Single-Phase Railways and Certain Phenomena in Single-Phase Generators. Dr. F. Marguerre. Abstract trans. from Elek Zeit. Discusses disturbances in Norway, the cause, and how the trouble can be over-3500 w. Elect'n, Lond-Feb. 7, No. 39905 A.

A New Single-Phase Railway in Norway. An account of the electrification of the Rjukan Ry. in the south of Norway. 1000 w. Engr, Lond-March 14, 1913.

No. 40834 A.

The Mittenwald Single-Phase Railway. Illustrated description of this section in the Tyrol, which is notable for beautiful Alpine scenery, and the construction of which involved some very difficult work. 2500 w. Engr, Lon—Feb. 21, 1913. No. 40316 A.

Two European Single-Phase Railways. Illustrated description of the Mittenwald Electric Railway and the Rjukan Railway. 2000 w. Elec Rev, Lond—Feb. 28,

1913. No. 40464 A.

Overhead Equipment for Single-Phase Railways. Illustrates and describes work carried out by Vedovelli, Priestley, et Cie. 2500 w. Engr, Lond — April 25, 1913. No. 41933 A.

Single-Phase Traction. M. Latour. Considers briefly the me-Abstract.) chanical construction of single-phase locomotives and the erection of overhead conductors. 1500 w. Elec May 30, 1913. No. 42769 A. Elect'n, Lond-

Single-Phase Traction. Marius Latour. Paper discussed at the Paris joint meeting. Mechanical construction single-phase locomotives and the erection of overhead conductors are discussed; also disturbance caused to telephone and telegraph lines, etc. 4500 w. Engng—July 18, 1913. No. 43968 A. Single-Phase Traction. M. Latour.

Paper read at Paris before joint meeting. Remarks on the mechanical construction of single-phase locomotives, and erection of overhead conductors; discusses disturbances caused to telephone and telegraph lines, etc. 4500 w. Mech Engr— June 20, 1913. No. 43379 A.

Traction by Monophase Current (Sur la traction par courant monophasé). Mechanical considera-Marius Latour. tions; contact lines, motors, commutation, etc. Diagrams. Discussion. 9000 w. Bul Soc Int d Electriciens—May, 1913. No. 43565 F.

See also Electrification, under RAILWAY Engineering, Motive Power and Equipment.

South Carolina

The Rehabilitation of Augusta-Aiken Railway & Electric Corporation's System.

Spain

Switzerland

E. C. Deal. Illustrated description of the complete equipment of generating station and sub-stations, methods of switching and transmission, etc. 4800 w. So Elect'n -Feb., 1913. No. 39874.

Pamplona-Sanguesa Interurban The (Die Ueberlandbahn Pamplona-Sanguesa). Herr Wagenknecht. Details of grade and line of the first single-phase Spanish railway, 56 kilometers long. Ills. 2000 w. Elek Kraft u Bahnen—June 14, 1913. No. 49546 D. 1913. No. 43546 D.

Standardization

Standardization on the Michigan United Traction. Illustrated description of the organization and methods employed in re-habilitating track and roadway. 2500 w. Elec Ry Jour—March 15, 1913. No. 40685.

Standardization of Special Work In Kansas City. A. E. Harvey. Gives standards of Met. Street Ry. Co. 2500 w. Elec Trac—Sept., 1913. No. 45511.

St. Louis

Report on United Railways of St. Louis. Deals with financial operations and valuation. 4500 w. Elec Ry Jour-Feb. 8, 1913. No. 39744.

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Subways

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City. Alfred Noble. An outline of the several railway tunnel and subway systems in New York City, describing particularly the construction of the tunnels under the rivers. Ills. 11000 w. Jour Fr Inst—April, 1913. No. 41284 D.

The Lexington Avenue Subway Four-track Tunnel Under the Harlem River. Illustrates and describes briefly some important sub-aqueous tunneling. Sci Am-March 29, 1913. No. 40962.

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William Glyde Wilkins. Considers the subject from the engineering and economic standpoint only, discussing questions of location, and financial and eco-General discussion. nomic features. Pro Engrs' Soc of W Penn-2300 w.

May, 1913. No. 42916 D. Alameda Avenue Subway in Denver. Illustrates and describes the construction and gives unit costs. 1500 w. Eng Rec -July 19, 1913. No. 48787.

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tween Sampierdarena, Genoa and Quarto (Linea sotterranea elettrica interurbana fra Sampierdarena Genoa e Quarto dei Mille). Description of the line, construction adopted, stations, and costs. Ills. and Map. 2000 w. Ingeg Ferroviaria —July 15, 1913. No. 45370 D.

See also Subway Construction, under RAILWAY ENGINEERING, Permanent Way and Buildings, and Tunnels, under CIVIL ENGINEERING, Construction.

Subway Stations Sanitary Features of New Subway Stations. H. M. Oman. Illustrated description of a typical layout, and of ventilation of stations and tunnels. 1500 w. Met Work-Aug. 22, 1913. No. 44545.

Switzerland

The Zweisimmen-Lenk Railway (Le chemin de fer Zweisimmen-Lenk). R. Zehnder-Sporry. Maps, profile and general description of this electric road. 1800 w. Bull Tech d l Suisse Romande—Nov. 10, 1912. No. 37507 D.

Notes on the Bernina Electric Railway (Note sur le chemin de fer électrique de la Bernina). J. Sheriaud. Brief outline of rolling stock, maintenance of way; and snow difficulties along the line. Ills.

Terminals

2200 w. Rev Gen des Chemins de Fer-Jan., 1913. No. 39081 G.

Terminals

Report on Cincinnati Terminal Possibilities. Gives B. J. Arnold's recommendations for the erection of individual joint terminals for freight and passenger service, respectively, a subway line using the bed of the Miami and Erie Canal, and several connections with steam and electric lines. 5500 w. Elec Ry Jour—Feb. 22, 1913. No. 39990.

Proposed Street Railway Terminal for

Newark. Plans and description. 900 w. Elec Ry Jour-Feb. 8, 1913. No. 39743.

The Efficiency of Terminals in City and Suburban Traffic (Die Leistungsfähigkeit von Kopfbahnhöfen im Stadt- und Vorortverkehr). G. Brecht. Suggested terminal arrangements for increasing efficiency. Diagrams. 3000 w. Elek Kraft u Bahnen—April 14, 1913. No. 42156 D.

Three-Phase

The Progress of Three-Phase Traction on Tramways. Explains the main points to which the induction motor and the three-phase system in general owe their success and considers applications of the system. 2000 w. Elec Rev, Lond-June 13, 1913. No. 43128 A.

Tires

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Street Railway Track Work at Toledo. Illustrates and describes Swartz. some double-tracking work on a busy street, also repairs and maintenance. 2000 Eng News—Dec. 5, 1912. No. 38063.

Special Trackwork Calculations. nest Larmuth. Notes covering most of the problems of permanent way engineers in tramway track work. 1200 w. Tram & Ry Wld—Jan. 9, 1913. No. 39385 B. Street Railway Tracks of Reinforced

Street Kallway Iracas of the Concrete (Strassenbahngleise aus Eisenbeton). Max Buchwald. Describes various current methods of imbedding the rails in reinforced concrete. Ills. 2200 Beton u Eisen-Dec. 14, 1912. No. 39018 E.

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built in Richmond, Ind. Ills. 1500 w. Engng & Con-March 19, 1913.

40727.

Track Maintenance and Reconstruction in San Francisco. Illustrates and describes interesting track appliances and machinery for removing paving, old rail and track foundations and for laying new tracks and paving. 3000 w. Elec Ry Jour-March 15, 1913. No. 40683.

Parabolic Junctions for Street Tracks (sui raccordamenti parabolici per trac-ciati stradali). Giulio Stahilini. A study of intersection curves for street railways. Diagrams. 5000 w. Monit Tec-Mar. 30,

1913. No. 41534 D.

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Bland. Historical account of the methods of track construction, dealing with points and crossings, rail joints and junctions. 2500 w. Elect'n, Lond—June 20, 1913. No. 43373 A.

Tramway Track, 1883 to 1913. Fred Bland. Read before the Tram. & Light

Rys. Assn. at Blackpool. A résumé from a manufacturer's standpoint. Ills. Also discussion. 7000 w. Tram & Ry Wld-

July 10, 1913. No. 43883 B.

Way Construction of the Connecticut Company. Describes the division of duties between the construction and the way departments in handling the track work. Ills. & Map. 2500 w. Elec Ry Jour— Aug. 30, 1913. No. 44874.
Track Construction. Illustrated ac-

count of modern methods of installing track in paved city streets. 9000 w. Elec Ry Jour—Oct. 4, 1913. No. 45714.

Traction

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Traffic

The Problem of City Traffic and Metropolitan Railways in the United States (Problemi di trajco urbano e ferrorie mettropolitaine agli Stati Uniti). Renzo Norsa. A study of conditions as found in Boston and New York. Ills. 2400 w. Industria—Mar. 30, 1913. No. 41535 D. Traffic Methods

Illinois Traction System's St. Louis Express and Freight Traffic Methods. Illustrated detailed description of the methods employed in handling a large express and freight business. 4500 w. Elec Ry Jour —Feb. 15, 1913. No. 39877.

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Trackless Trolley Installation at Keighley. Harry Webber. Illustrated description of the Cedes-Stoll system adopted and installed. 3000 w. Tram & Ry Wld

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Trolley Designs

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Trolley Lines

Electric Railway Properties and the Public. Calvert Townley. Shows the short-sightedness of placing so many restrictions that development is retarded. 2200 w. Elec Jour—Oct., 1913. No.

46319.

Specifications for Overhead Trolley Construction. Abstract of the 600-volt overhead construction adopted by the Am. Elec. Ry. Engng. Assn. Ills. 5000 w. Elec Ry Jour—Oct. 18, 1913. No. 46127.

Valuation

A Street-Railway Valuation. Discusses the principles behind Mr. Bion J. Arnold's valuation of the street railway lines of Kansas City, Mo. 5500 w. Eng News—May 22, 1913. No. 42350.

Analysis of the Premises adopted and Methods Used in Determining the Cost to Reproduce New, Together with the Depreciation Thereon of the Physical Property of the Metropolitan System and the Kansas city and Westport Belt Railway of Kansas City, Mo. Abstract from report by Bion J. Arnold, explaining methods followed. 6000 w. Engng & Con—May 28, 1913. No. 42520.

Something Along the Line of Physical and Intangible Valuation as Covered by Recent Legislation. Robert B. Rijenberick. Read before the Cent. Elec. Ry. Assn. Discusses features which may involve great injustice. 6000 w. Elec Trac—July, 1918. No. 48812.

Other Elements of Value Than Franchise Values. Clark M. Rosecrantz. Abstract of paper read before the Am. Elec. Ry. Assn. Discusses elements which make up the values of public utilities other than "physical value" and "franchise value." 3500 w. Elec Ry Jour—Oct. 16, 1913. (Daily Ed.) No. 45928.

Warsaw

Warsaw Street Railways (Strassenbahn Warschau). Description of power house, equipment, rolling stock and system. Ills. and Plate. 1700 w. Elek Kraft u Bahnen—Sept. 4, 1913. No. 46089 D.

Westphalia

Électric Railways in the Rhine-Westphalian Industries (Die elektrischen Bahnen in Rheinisch—Westfälischen Industriegebiet). Hans Baswitz. Map of the systems in operation with table of mileage and equipment. 1000 w. Elek Kraft u Bahnen—Sept. 4, 1913. No. 46087 D.

Wheels

Brooklyn Wheel, Axle and Gear Practice. Gives experiences with steel wheels and methods of handling them, axle improvements, betterments in gear and pinion practice, etc. Ills. 5500 w. Elec Ry Jour—Nov. 9, 1912. No. 37369.

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Parabolical Overhead Wiring for Electric Roads. Owen M. de Munnick. Illustrates modern practice. 1000 w. Sci Am Feb. 15, 1913. No. 39885.

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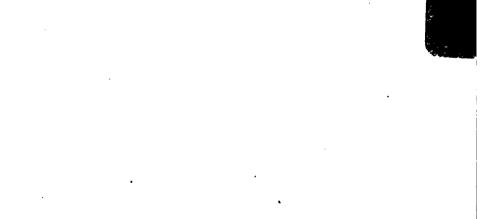
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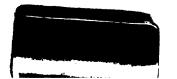
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